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No. CXII.

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Communications have been received from Dr Gibbs, Dr Bennati, Dr Wilson, and Mr C. Thomson.

The following works have been received.

Commentatio de Arteriis Anatis. Auctore E. Hahn, Med. Dr. Accedunt Tabulæ Aeneæ. Hannoveræ, 1830. 4to. Pp. 59.

Practical Observations on Cholera Asphyxia, communicated in a Report to the Greenock Board of Health. With an Appendix. By James B. Kirk, M. D. Greenock, 1832. 8vo. Pp. 45 and 53.

Introductory Lecture to a Course of Forensic Medicine, delivered in the Anatomical Theatre of St Bartholomew's Hospital, November 1831. By George Burrows, M. D. Fellow of Caius College, Cambridge. London, 1831. Pp. 72. 8vo.

Life Tables founded on the discovery of a numerical Law, regulating the Existence of every human being. Illustrated by a New Theory of the Causes producing Health and Longevity. By T. R. Edmonds, B. A. late of Trin. Coll. Camb. London, 1832. 8vo. Pp. 42 and 38.

Physiologie Medicale et Philosophique. Par Mm. Pelletier, de la Sarthe, 4 vols. in 8vo. Paris. et au Mans, 1831. Tome Premier seulement à present. Pp. 496.

Histoire Generale et Particulière des Anomalies de l'organization chez l'homme, et les animaux, &c. ou Traité des Teratologie. Par M. Isidore Geoffroy Saint Hilaire, Tome premier, avec atlas. Paris, 1832. 8vo. Pp. 746.

Lectures delivered at the Mechanics Institution, 19th December 1831 and 13th February 1832, on Carbon, Oxygen, and Vitality, the three great agents in the Physical character of Man; with Remarks on Asiatic Cholera. By George Rees, M. D. M. R. C. Physicians Lond. London, 1832. 8vo. Pp. 107.

An Account of the Life, Lectures, and Writings of William Cullen, M. D. Professor of the Practice of Physic in the University of Edinburgh. By John Thomson, M. D. F. R. S. L. and E., &c. &c. In Two Volumes. Vol. I. Edinburgh, 1832. 8vo. Pp. 668.

A Practical Treatise on the Forms, Causes, Sanability, and Treatment of Pulmonary Consumption. By Edward Blackmore, M. D. Physician to the Plymouth Public Dispensary. London, 1832. 8vo. Pp. 242.

Two Lectures on the Circulation, Respiration, and mode of Nutrition in Animals and Plants; with a short account of the mode of Growth in Monocotyledonous and Dicotyledonous Stems, and an Investigation into the

Mutual Relation which subsists between these classes of Animated Nature, &c. By W. H. Robertson, M. D. London 1832. 8vo. Pp. 32.

The Principles and Practice of Obstetric Medicine, in a series of Systematic Dissertations, &c. &c. By David D. Davis, M. D. M. R. S. L. &c. &c. London, 1832. Part V. VI. VII. and VIII. 4to.

On the Structure of the Human Placenta, and its connection with the Uterus. By Robert Lee, M. D. F. R. S., &c. &c. Phil. Trans. 1832. 4to.

A Practical Treatise on Uterine Hemorrhage, in connection with Pregnancy and Parturition. By John T. Ingleby, Member of the Royal College of Surgeons in London, one of the Surgeons to the General Dispensary, Surgeon to the Magdalen Asylum, and Lecturer on Midwifery at the School of Medicine at Birmingham. 8vo. Pp. 276. London, 1832.

Observations on the General Principles, and on the particular Nature and Treatment of the various species of Inflammation. By J. H. James, Surgeon to the Devon and Exeter Hospital, &c. London, 1832. 8vo. Pp. 565.

The Anatomy of the Thymus Gland. By Sir Astley Cooper, Bart., F. R. S. Sergeant Surgeon to the King, &c. &c. London, 1832. 4to. Pp. 47. Plates.

The London Medical and Surgical Journal, No. IV. to XIX. from 12th April to 9th June 1832, inclusive.

The London Medical Gazette, No. 25, from 24th March 1832 to No. 11, 16th June.

Medico-Chirurgical Journal, and Review of Practical Medicine. By James Johnson, M. D., &c. No. 32. April 1832.

Exposition de la Doctrine Médicale Homœopathique, ou Organon de l'Art de Guerir; Par S. Hahnemann; Accompagné de Fragmens des Autres Ouvrages de l'Auteur, et suivie d'une Pharmacopée Homœopathique, Nouvelle traduction sur la Quatrième Edition. Par A. J. L. Jourdan. Membre de l'Académie Royale de Médecine. Paris, 1832. 8vo. Pp. 524.

THE

EDINBURGH

MEDICAL AND SURGICAL JOURNAL.

1. JULY 1832.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Remarks on Umbilical Hæmorrhage.* By THOMAS RADFORD, Esq. Senior Surgeon to the Manchester Lying-in Hospital and Dispensary for the Diseases of Women and Children.

THE bleedings which occur after birth from the *funis umbilicalis*, and from the *umbilicus* after the separation of the cord, are usually confounded as to the source whence they arise, and the causes by which they are produced.

I.—*Bleeding from the Funis.*

This species of hæmorrhage may occur immediately after the application of the ligature, when the child, being laid aside for the short space of time required to make the mother comfortable, may be found drenched in blood. It may also happen several hours after birth, and the nurse may be awakened to an inquiry by the feebleness of the infant, and the unusual pallor of the lips and general surface. This hæmorrhage may proceed either from the arteries or from the vein, and generally depends upon an ineffectual application of the ligature, although bleeding would not universally happen if the funis were left untied.*

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* "Dr Eller, Physician at Berlin, relates several instances of the navel strings of children being left untied after they were cut, without being attended with any hæmorrhage or other bad consequence.—Commerc. Norimberg, 1733, Hebd. 48, § 2."—Edin. Medical Essays and Observations, Vol. iii. page 405.

Analogy substantiates this statement. In the brute creation the funis is always left loose, yet hæmorrhage never to my knowledge takes place. This effect may be readily accounted for, by the method which the mother adopts in order to separate the young from its connection with the placenta. As soon as the fœtus and its appendages are expelled from the *uterus*, the brute mother commences the process of separation, which is accomplished by gnawing and twisting the *funis.* The influence of contusion and of torsion upon the blood-vessels in preventing hæmorrhage, is well seen in severe gun-shot wounds, and also in some of the serious accidents produced by machinery, in which cases the limb is twisted off from its connection with the body. Under these circumstances, hæmorrhage is comparatively trifling. But here, as under many other circumstances, analogy is insufficient upon which to found rules for general practice. On the other hand, we shall sometimes meet with cases in which a tight application of the ligature will not always prevent this occurrence. The causes giving rise to this failure of security, and the practice to be adopted in order to avoid their operation, I shall now proceed to detail.

I remark in the first place, that the pulsation of the *funis* should always have ceased before the ligature is applied, because this circumstance is the surest indication that the process which is essential to the independent circulation of the fœtus has commenced; and also that those changes have taken place in the vessels which afford security against bleeding. We occasionally meet with the *funis* unusually *thick*, in consequence of the very large quantity of *glutinous matter* contained within its coverings. In such cases, if we adopt the usual practice of tying the *funis*, by " placing one ligature at a certain distance from the abdomen, and the other two inches distant," on the placental side, bleeding will most probably occur. If the extremity of such a funis, tied as above stated, be examined, the orifices of the vessels will be seen patulous, thus proving an ineffectual compression of their sides. Some time ago I was called (about three hours after its birth) to an infant which was bleeding. The hæmorrhage had been considerable; the skin was extremely pallid, and the pulse scarcely perceptible. The binder, and also the cloth which enveloped the *funis* were removed. The ligature, which had been tightly placed upon the navel string, was now become loose. The *funis*, which had diminished in thickness, was raised for the purpose of examining the vessels, and their orifices were seen widely gaping. The practice to be adopted in such cases, in order to prevent the dangers arising from the ordinary method of tying the *funis*, is as follows: Let the ligature be first tightly placed upon the placental portion of the cord, and then let another ligature be loosely placed upon that portion of the funis which is to remain connected with the fœtus, and which must be tightened after the division; and in order to give additional security, let a second ligature be placed upon this part. The advantage of this method arises from the more decided influence which the ligature produces upon the calibre of the vessels, in consequence of the more serous portion of the gelatinous fluid escaping from the divided extremity.

The umbilical cord may be diseased, being either *ossified* or of a *cartilaginous firmness;* and it will be obvious that such a condition exposes the infant to the dangers of hæmorrhage. If ossification has taken place, the cord will break when the ligature is tightened, in consequence of the extreme fragility of its texture. A case, illustrative of this accident, is related by Mr Logan, in the number of the Edinburgh Medical and Surgical Journal for April last. He was under the necessity of removing the ligature several times, and re-applying it on account of the bleeding which took place. The application of a broad ligature (such as a piece of tape) in this case, promises a greater chance of security against bleeding than one of the usual thickness, as a thin ligature would inevitably divide the sides of the vessel. A *varicose* state of the umbilical vein is occasionally met with. In some cases the disease occupies only a small portion of the vessel, while in others, its whole canal is morbidly dilated. In this state of the cord, bleeding will most assuredly occur, either from its extremity, immediately after its division, or, according to Dr Dewees, in the course of two or three days, in consequence of ulceration taking place in the side of the vessel, from the ligature being tied so as to include the diseased portion, that is, nearer to the placenta than the dilated portion of the vein. To prevent this accident, then, the ligature must never be placed upon the varicose part, but must invariably lie nearer to the abdomen of the child than the situation of the disease.

II.—*Bleeding from the Navel.*

The complete separation of the navel string is not always accomplished at the same period of time, but generally from the fourth to the seventh day; at which period, the mouths of the umbilical arteries and vein are usually closed. It occasionally happens that this closure is not effected by the powers of nature; and hence when the funis comes away, or in a short space of time after, an hæmorrhage commences from the navel, which generally destroys the infant. This is an occurrence which produces considerable anxiety to the medical attendant; it is generally confounded by the nurse and friends with hæmorrhage arising from displacement of the ligature, and is too often ascribed to the negligent and imperfect tying of the funis at the time of birth. Thus the character of the accoucheur suffers undeservedly.

I was requested to visit an infant seven days after birth, that was bleeding from the umbilicus. The hæmorrhage had commenced in the night, shortly after the separation of the funis. The gentleman (whose case it was) had made a judicious attempt to arrest the bleeding by the application of a graduated compress, supported by straps of adhesive plaster, and a roller. In a short time, however, the blood again appeared, trickling from under the bandages, and the poor infant was nearly exhausted. The applications were removed, and a second attempt was made to compress the bleeding orifice, but with as little success as before, as in a short time blood was again found oozing from beneath the bandages. A third attempt was made to effectually check the effusion of blood, but again failed, and the child died in the afternoon. Upon examining the part after death, the vein was found uncontracted, and the umbilicus was sloughy, ragged, and of a dark colour. I have seen compresses, moistened with powerful astringents, applied to suppress this hæmorrhage. I have also seen an attempt made (but unsuccessfully) to bring together the sides of the bleeding vessel, by passing a hare-lip pin through the integuments, and thus pinching it up. Several cases of this nature have come under my observation, but they have all been fatal except one.

A hospital midwife, in great alarm, brought an infant eight days old to me. Whilst she was dressing it, the funis came away, and a discharge of blood from the umbilicus commenced. Upon examination, the binder and the under parts of the child's dress were found soaked with blood, but the bleeding had now entirely ceased. A compress, supported by adhesive straps, was applied; and no more hæmorrhage occurred. I was induced to suspect that this bleeding came from one of the arteries. The result of umbilical bleeding in my practice has been invariably fatal, with the exception of the case just related; and, from an extensive inquiry made amongst my professional friends, I have ascertained this to be the usual termination. Converging at the umbilicus are three vessels, two arteries, and one vein,—from all of which vessels hæmorrhage may occur; hence we may have venous and arterial bleeding. The opinion usually entertained as to the dangers arising from these two kinds of hæmorrhage, (as occurring in other parts of the body,) is not true in the cases referred to in these observations. Venous hæmorrhage from the umbilicus occurs frequently, and in general terminates fatally. Arterial hæmorrhage, on the contrary, in this situation, is more rare, and more fortunate in the result. I have already alluded to the insufficiency of compression to arrest bleeding from the umbilical vein. This is readily accounted for, when we consider the situation of the vessel, which is placed behind the flexible abdominal parietes, to which it is attached, there being nothing firm or resisting behind it, by the aid of which a compress might effectually obliterate the calibre of the vessel.

Another circumstance unfavourable to the operation of compression is the indisposition to contraction in the vein. From my examination of infants after death, I conclude that this vessel is not materially changed immediately after birth. The calibre is not completely and permanently obliterated at the time of the separation of the funis. Its extremity alone is consolidated by adhesive inflammation, the remaining portion of the vessel being filled with coagulated blood, which is gradually absorbed. The removal of this coagulum commences at its umbilical extremity, at which place it is first converted into ligament. Escharotics have been recommended to arrest bleeding from this vessel. The danger of propagating inflammation to the abdominal cavity in consequence of the immediate connection of this vessel with the peritoneum, would be a sufficient objection to the employment of these means, besides their inadequacy to accomplish the end. The actual cautery has also been recommended, but its application is equally dangerous. I have also stated that an attempt to bring together the sides of the bleeding vessel, by passing a hare-lip pin through the integuments, &c. was unsuccessful. The reason of this will be readily understood if the condition of the orifice be considered, which is usually in a ragged state of ulceration, and sloughy, and therefore highly unfavourable to obliteration by adhesive inflammation. From the preceding observations it will appear that little reliance is to be placed upon the means usually recommended for the management of bleeding from the umbilical vein. Under these circumstances, then, what is to be done? we have no alternative but that of cutting down upon the vessel and placing a ligature upon it. If we have recourse to this expedient, an incision must be made through the integuments in a direction upwards from the umbilicus, cautiously cutting down to the vessel, which, by stretching its extremity, is felt to be of a cord-like firmness. As this vessel lies external to the peritoneum, great care must therefore be taken in detaching the membrane from the vein, neither to wound nor include it within the ligature. This practice promises the greatest chance of success, and at all events does not (if due care be observed in the operation) place the little patient in a more dangerous situation. An inquiry will naturally be made, is a ligature to be applied in all cases, and under all circumstances, of umbilical bleeding? The case before stated of a successful termination by means of a compress, &c. will sufficiently prove that a hasty cutting down upon the vessel, and an indiscriminate application of a ligature is not to be recommended. The bleeding in this instance I suspected to proceed from one of the arteries. Hæmorrhage from these vessels is much more manageable on account of their greater length and the contractile power of their coats. A case of fatal umbilical hæmorrhage is related by Mr Pout in the twelfth volume of the London Medico-Chirurgical Transactions, in which, from the examination after death, Mr Pout concludes that the hæmorrhage proceeded from one of the arteries. He says, "if ever another case of the kind were to come under my care, I should not hesitate to cut down upon the arteries and tie them as the only means of security."

As the vessels run in opposite directions, it will be important to have a correct diagnosis, in order not to make fruitless incisions. In cases of venous hæmorrhage, the blood is uniformly thick and dark-coloured, and is never thrown forcibly out, but oozes incessantly from the mouth of the vessel, which is in the condition I have before stated. On the other hand, in cases of arterial hæmorrhage, the blood is of a lighter hue, and must in some measure be influenced in its discharge by the action of the vessel. In order to act upon the most certain grounds, it would be well to try the influence of compression, which, if the hæmorrhage be arterial, I believe would be successful; but if this trial should fail, and the other diagnostics of venous bleeding be present, then I should not hesitate to cut down upon the vein, and place a ligature upon it as the only security.

ART. II.—*Cases of Cholera Asphyxia.* By CHARLES WILLIAM GRAHAM, M. D. Licentiate of the Royal College of Surgeons of Edinburgh, and Surgeon to the Edinburgh Regiment of Militia, Dalkeith.

MARCH 5, 1832.—Sergeant Robert Jenkinson, belonging to the staff of the Edinburgh Militia, ætatis 44, of a spare phlegmatic temperament, and temperate habits, was attacked about four this morning with vomiting and purging of a gruelly appearance, accompanied with violent spasmodic affection of the feet and legs. When visited at half after eleven A. M., nearly eight hours from his being seized, his face was pale ; lips livid ; eyes sunk, and surrounded with a livid circle ; pulse small and indistinct ; spasms and coldness over the surface generally ; tongue white and cold, as also was the breath ; countenance dejected ; thirst urgent ; occasional pains in the bowels. Made urine at nine this morning. Was instantly bled to the extent of ten ounces, which exhibited a dark grumous appearance, with scarcely any serum. Hot turpentine frictions to the feet and legs ; a large sinapism to the abdomen. At half after one o'clock, pulse 95, soft, regular, and more perceptible ; surface somewhat warm ; countenance more lively ; voice stronger ; the livor disappearing from the eyes and lips ; vomiting and purging, with spasms, still continue urgent. A starch glyster, with *Tinct. Opii* ʒi. to be administered immediately ; toast and water, or beef-tea, for common drink, which is to be given in small quantities at a time. At four P. M. continues much the same. Tied up the arm and abstracted twelve ounces of more blood, which had on its first beginning to flow a dark, but soon after assumed a florid, appearance, and on standing exhibited three times as much serum as there was at the first bleeding. *Calomel. gr. x. Gum. Opii gr.* i. *M. fiat Pilula statim sumenda,* washing it down with a table spoonful of brandy, and the same of hot water.—6 P. M. has vomited the pill, which is to be repeated, with the same quantity of hot brandy and water ; glyster has not been returned ; spasms still continue to return at intervals. A blanket dipt in boiling water to be wrapt round the legs and feet, and repeated when the spasms are severe.—10 P. M. has had several attacks of vomiting of the fluid taken to allay thirst, which still is very urgent. Spasms much relieved by the fomentation, and now recur at long intervals ; surface warm ; pulse weak and tremulous ; *subsultus tendinum* of the right foot ; complains of occasional pains of epigastrium ; eyes and lips have completely lost their livid colour ; countenance assuming its natural expression ; tongue white and cold ; has made no urine. Was dry cupped over the region of the heart and epigastrium, which improved the *fulness and frequency* of the pulsations of the radial artery. A sinapism to be applied as before to the same quarter ; and to have *Calomel* ℈i. every four hours, and alternated during the night with beef-tea and hot brandy and water.

March 6th, 7 A. M. has passed an indifferent night ; no sleep ; has had nausea and frequent fits of vomiting of what had been taken for drink ; bowels not acted on by the calomel ; has made about a wine-glassful of turbid urine ; had a slight return of cramp in the right foot at five o'clock, none since ; pulse 96, and gaining strength ; surface of a natural heat ;

thirst urgent, and still calls loudly for cold drinks; tongue cleaner and warmer. Omit the calomel, and to have a teaspoonful of magnesia mixed into half a teacupful of tepid soda water occasionally, and a large purgative enema composed of senna and salts immediately.—1 P. M. much improved since morning visit; has had nearly an hour's sleep; passed two dark green-coloured motions; has made urine again in greater quantity; thirst less urgent; no vomiting; pulse 102, soft, and full. *Ol. Ricini* ℥i. immediately, and veal soup for diet. 8 P. M. has slept occasionally this afternoon; passed four dark, feculent, bilious motions; makes urine freely; pulse 110, full; surface warm and comfortable; breath has mecurial fetor; gums somewhat swollen and tender.

March 7th, 10 A. M. continues to improve; dejections still dark and bilious; urine quite natural in appearance; pulse 86, regular, and moderately full. Ordered *Ol. Ricini* ℥*i.*; diet as yesterday.—9 P. M. bowels open, and motions more natural; pulse soft and regular; complains of nothing but debility. The glandular system seems now to be performing its various functions.

8th, Has had a good night, and is now convalescent; was ordered to live more generously, and to attend to the state of the bowels.

February 21st, 1832, 9 o'clock A. M. Betsy Lees, ætat. 40, of rather intemperate habits, was seized with diarrhœa and vomiting betwixt twelve and one this morning, was visited by Dr Renton, who, with no inconsiderable difficulty, obtained about a tablespoonful of blood from the arm. Complains chiefly of pains in the extremities, which are cold and livid; tongue cold and somewhat white; eyes sunk, and suffused with blood; features collapsed; nausea, with inclination to vomit; pulse very indistinct; thirst urgent. Was dry cupped over the chest; frictions with hot turpentine, and warm fomentations to the legs and feet.—10 A. M. pulse has returned since the cupping. *Calomel. gr. x. Gum. Opii gr.* i. *M. fiat Pil.* To have saline draughts to allay the irritability of the stomach.—2 P. M. surface warm; pulse 90, soft, and regular; voice more audible; vomiting and purging have ceased; thirst more urgent; no urine made. The bottles of hot water to be kept constantly applied to the feet, and to have a little hot brandy and water, with *Tinct. Capsici* occasionally, and the same pill to be repeated.—7 P. M. lies in a state of stupor, but appears quite sensible when roused; pulse scarcely perceptible; surface cold; eyes quite sunk; and two brown marks, similar to what lunar caustic would make on being applied to the skin, have made their appearance on each conjunctiva; respiration slow, and made with a fetch. Boiling water was poured over the feet and legs, which had the effect of making her sit up, but with no other good or permanent advantage. Sinapisms to the legs and feet, with one to the abdomen, were directed to be applied; and the hot brandy and water, with the *Tinct. Capsici*, to be given now and then.—10 P. M. seems to be sinking fast. Died at a quarter past eleven.

March 20th 1832, 10 A. M. George Wilson, labourer, ætat. 18, of hale and sound constitution, said to be of temperate habits, was seized with vomiting and bowel complaint, with cramps all over the body while at work. In attempting to walk home, he had several times to lie down, the spasms in the bowels were so excruciating.

I visited him immediately, when I found him in bed lying coiled up like a serpent, and roaring most hideously from pain. The countenance was purple; eyes sunk and muddy; tongue and surface cold; pulse small, and sinking rapidly. A vein was opened, and sixteen ounces of blood abstracted, which acted like a *charm* in allaying the spasms, as he ceased to bawl so soon as twelve ounces had flowed. Bottles of hot water were then applied to the feet and legs, which he now could stretch out, and in the course of ten minutes his countenance assumed its natural hue, his pulse became fuller, and the surface warmer; in short, he was quite a different creature. He was ordered *Ol. Ricini* ʒx. *Tinct. Opii gtts.* xxv. with *Aq. Menth.* and beef-tea for diet. Next day he was quite well, and out of bed.

February 1st, 1832.—Isabella Elder, æt. 9, in the enjoyment of good health, had dined solely on potatoes, and went to school, was seized on her return home (5 o'clock) with severe diarrhœa; saw her at eight, when vomiting was now added to the other symptoms. She complained much of pains in the bowels and legs; tongue and surface cold, extreme thirst, eyes sunk and surrounded with a livid areola, pulse small and feeble, features collapsed. Took blood from the arm until it put on a florid appearance, which happened when nearly six ounces had flowed; got her put into a warm bath impregnated with mustard, and after being kept there for five minutes, was well dried and placed between warm blankets. Ordered her a saline effervescing draught, with *Tinct. Opii. gtts.* x.; and the extremities to be well and frequently rubbed with hot turpentine, bottles of hot water to the feet, and a sinapism to the stomach. Called near to twelve, the pulse had ceased to beat; surface quite livid and cold; countenance more sunk and cadaverous; vomiting and diarrhœa somewhat abated; spasms recur occasionally; thirst still urgent.

Panado, with white wine in small quantities, was ordered, and external heat continued.

Died 2d February, at 5 A. M.

January 24th, 1832.—John Burns, æt. 67, a pauper from the parish of Haddington, of a weak and broken-down constitution, had diarrhœa from an early hour in the morning. Visited him at 4 P. M. found him with a pulse almost imperceptible; features shrunk, surface cold and livid, nausea and vomiting of a whitish appearance, tongue and breath cold, complete suppression of urine. Ordered sinapism to the abdomen; frictions, with hot turpentine, saline effervescing draughts, with a tablespoonful of brandy to allay the irritability of the stomach, and a starch enema, with *Tinct. Thebaicæ* ʒij.—25th, had slept well, found that reaction had taken place, and that he was infinitely better. Ordered the brandy to be withheld, and beef-tea to be substituted, as he complained of slight headach. From this day he slowly but gradually improved, and was discharged perfectly well on 8th February, when he walked home.

Much has been said regarding the contagious and non-contagious nature of this truly appalling disease. For my own part, I must say, that long ere it made its appearance in this country, I was quite satisfied as to its being highly contagious, from the rapidity of its progress, and the great and extensive ravages it had made in the eastern quarter of the globe: and it was not until I had witnessed the disease as it appeared in this neighbourhood that I was induced to change my opinion.

And here it may not be improper for me to state, that in the case of Jenkinson, *his wife shared his bed during her husband's illness*, and some of the members of the family occupied the bed wherein he was when seized, without the bed-clothes having been washed, the house fumigated, or any of the usual precautions taken; and all remain in perfect health up to this date. This man took one drachm of calomel in all, without inducing salivation. Might this not arise from the small quantity of blood sent to the salivary glands?

As this disease at the commencement is, in my opinion, one of oppression rather than debility, I am convinced of the good effects produced by the *free and early use of the lancet*, in equalizing the circulation, and relieving the system of a most disagreeable load. In proof of which, I may refer to some of the above cases, where the most beneficial results occurred when blood was obtained in sufficient quantity in the early stage of the disease. And I am confident, that, were this operation oftener resorted to at the very onset of the contagious fevers of this country, keeping alway in view the age, habits, and constitution of the patient, we should have fewer deaths to record.

Dalkeith, 7th April 1832.

Art. III.—*Cases of Insanity, with the necroscopic appearances, &c.* By J. Macrobin, M. D. Medical Superintendent of the Lunatic Asylum, Aberdeen.

CASE I.—John Davidson, ætat. 24, from Aberdeen, a pressman, admitted 1828. This patient became fatuous in 1825, and was admitted into the Asylum in this state, from which, however, he almost completely recovered in 1827, after the continuance for some months of extensive suppuration from scrofulous abscesses, which had formed in the cellular tissue of the lower extremities. He, however, relapsed in the course of three months after being removed by his friends from the Asylum, and after the sores had healed, and was re-admitted to the Asylum, where he continued fatuous to the day of his decease, having become gradually emaciated, and finally œdematous.

Inspection.—15th January 1832, 16 hours after death. *Head.*—The posterior lobe of the left hemisphere of the brain presented patches of ecchymosed blood under the *pia mater*, over the surface, and into the substance of the convolutions, with some softening of the surrounding cortical substance.

The other parts of the brain presented no morbid appearances, with the exception of a slight albuminous effusion under the arachnoid, but confined to the posterior and depending parts, where the membrane also appeared to be thickened, and was very easily detached from the subjacent cortical substance.—The blood-vessels did not appear at all diseased, either in the brain, or near the heart.

Thorax.—The lungs were one mass of tubercles. No traces of disease elsewhere, except enlargement and vascularity of the mucous follicles of the ileum, with incipient ulcerations.

Note.—As no accession of fresh symptoms referrible to disorder of the cerebral functions was observed previous to death, and as the appearance of the extravasated blood evidently implied that it had not existed for any length of time prior to the death of the patient, it is probable that it was occasioned by the fits of coughing, which, along with a consolidated and impervious state of the respiratory organs, would induce a degree of congestion in the vessels of the brain, in consequence of which effusion might readily take place, from the rupture of the capillary vessels, where in every respect the system was much enfeebled. It is therefore not very probable that this appearance of ecchymosis had any immediate connection either with the insanity, or even with the death of the patient.

Margaret Panton, ætat. 70, from Aberdeen, admitted 1808, 21st February.

Inspection 12 hours after death.—The *calvarium* was thin, and its removal was effected with difficulty, in consequence of the very firm adhesion of the *dura mater* to the inner table, especially along the line of the longitudinal sinus, where the membrane was thickened and vascular. Some patches of the membrane were left adhering to the occipital bone. A laceration which had been produced in effecting this removal allowed the escape of between four and five ounces of limpid, colourless serum, which had been deposited between the *dura mater* and arachnoid, and which lay over the surface of the right hemisphere of the brain. The *dura mater* over the right hemisphere was accordingly found collapsed, and thrown into folds. Upon reflecting this membrane, which otherwise presented a natural appearance, the whole cerebral substance composing the right hemisphere was discovered much compressed, and greatly diminished in bulk. The convolutions were flattened and pressed together, and over a space of from an inch and a half to two inches in diameter, and immediately above the lateral ventricle, they (the convolutions) had entirely disappeared, apparently from absorption, leaving an irregular oval shaped depression, the base of which consisted of the *corpus callosum*, visible under the arachnoid and *pia mater*, which lined this depression, and which were much thickened,—so that a layer of medullary substance of three or four lines in thickness only existed between the outer surface of the brain, and the right lateral ventricle. There was, however, no direct communication between the ventricle and the outer surface of the brain. There was another similar but smaller depression or cavity on the surface of the anterior lobe of the same hemisphere. In connection with these appearances the whole of the cerebral substances had undergone great compression from the presence of the fluid, the entire hemisphere having suffered a diminution to the extent of at least one-third of its ordinary bulk, and being sunk much below the level of the opposite hemisphere.—There was no appearance of increased vascularity of the *pia mater;* and the substance of the brain generally presented a natural consistence and colour, with the exception of some venous congestion, —the number of dark bloody points being numerous. There was no fluid over the left hemisphere, nor more than usual in either ventricle. Both choroid plexuses were turgid and hydatiform.

The apex of the upper lobe of the left lung was tubercular, and the lower lobe of same lung more solid than natural, being without crepitus, and greatly infiltrated with serous fluid; and there were some traces of recent lymph causing adhesion between the *pleura costalis et pulmonalis.* The right lung quite healthy. No disease of the heart or arteries, there being not the least tendency to ossification in them or any other texture of the body.—The abdominal viscera were sound.

The subject of the above appearances, a female in the lower ranks of life, had been confined to the Lunatic Asylum for upwards of twenty years; and was seventy years of age when she died. She had completely lost the use of the left upper extremity, which was quite rigid and bent from contraction of the flexor muscles of the fore-arm and fingers. It was stated that she suffered some febrile attack (" a fever" the friends called it,) about puberty, which occurred repeatedly, and which at length affected her mental faculties; and that the paralytic affection of the arm occurred about the same time; but little of the history can be relied on previous to her admission in 1808, since which time she had continued to enjoy pretty good general health. Her insanity was marked by various hallucinations and illusions of the external senses, especially those of sight, hearing, and common sensation.

Her memory had also suffered, her remembrance of events since her attack being quite abolished, though she had a lively recollection of all the circumstances of her life previous to this. She was very loquacious, and highly irritable and ill-natured. The natural functions were performed in health to the last.

David Bruce, ætat. 47, from Aberdeenshire, admitted 1st August 1831, and died on the 3d of March 1832, under appearances of much debility and emaciation.

Inspection, 16 hours after death, 4th March 1832. *Head.*—At the anterior part of the middle lobe of the right hemisphere, the cortical substance over the space of a square inch was in the state of distinct ramollissement, diffluent, broken down, and converted into an ochre-coloured pulp, which had stained the *dura mater* of a bright yellow,—the proper membranes of the brain having been removed at this point by the morbid process. A similar change was observed to be going forward in a smaller space on the convolutions of the anterior lobe. This softening and disorganization was best marked on the surface of the convolutions; it diminished in intensity, as it extended upwards, and did not penetrate to the medullary substance.

The arachnoid over the whole convex surface of the brain, and over the anterior as well as posterior lobes, was greatly thickened, and the *pia mater* was very vascular, which vascularity extended between the convolutions; and the membrane admitted of being easily removed.

The same membranes covering the base of the brain were not thickened. There was only slight effusion of serum over the surfaces, and into the ventricles of the brain, not exceeding ℥ss. in the latter situation.

The subject of the above appearances was a labourer, and had led a sober and industrious life; and previous to May last, (1831,) had exhibited no indications of mental disturbance, nor morbid train of thought, though his bodily health had somewhat declined. But for two or three weeks previous to the accession of the maniacal paroxysm (which happened about the middle of May) he had begun to exhibit a change of temper and disposition, being one time gloomy and melancholy, and at another irritable and excited. He continued to labour upwards of two months under violent maniacal delirium, when fatuity supervened, and it was then that he was brought to the Asylum (1st August last.) He was unable to answer questions, though at times, if the question was repeated and his attention roused by the speaker, he would seem to comprehend what had been said: for he would labour to give utterance to some words in reply, and probably after the lapse of a minute, some answer might be obtained; while the words, which seldom amounted to three or four, were uttered slowly and with hesitation, and apparently with difficulty.

His aspect was absent, and led to the impression that in general he did not comprehend what was addressed to him. His memory seemed to be nearly abolished. The pulse was feeble and slower than natural. He was unwilling to move from his seat or from the spot where he might be standing. And when he walked his gait was unsteady; and latterly, he could not walk without staggering.

His appetite and the other natural functions, though pretty regular and healthy, were disregarded by the patient, and, unless when fed, he would never take food, nor even ask or make signs that he wanted it. Once or twice during the state of fatuity, he exhibited some return of excitement, which was marked by singing, vociferating and dancing, or rather whirling about.

Robert Hunter, ætat. 45, admitted 15th April 1830; formerly a watchman in the London Docks, and a native of Aberdeenshire, of tall slender form.—Exhibited for the first time in June 1829, symptoms of mental aberration, and having been sent to Scotland by the officers of the London Dock Company, was received into the Asylum in April 1830. In June following (when I took charge) he presented a state of much mental and bodily excitement, being constantly in action, often walking round the airing-ground for hours together, repeating portions of Scripture. In doing so, he seemed to personate the Deity, and addressing himself by his own name, he would say "My dear Robert never mind, they cannot harm you; you have been good to the poor, and shall soon visit the mansions of fame, and sit on my right hand," &c. &c. He would then repeat with great precipitancy and in rapid succession, a number of passages, calculated to inspire him with the fullest confidence of the favour of God and his Saviour, whom he then imagined to be speaking to him or "in him;" most gravely asserting, that the words he delivered were not his words,—that it was not he who was speaking. He would suddenly introduce in the midst of some scriptural quotation, the most incoherent ideas, in allusion to his former condition as a watchman. But when interrupted in his train of morbid ideas, he would answer questions on any subject unconnected with them, with perfect coherency.

His memory seemed to have suffered, and he was impatient of any interruption to his thoughts. There appeared to be also either a loss of power in the perceptive faculty, or his attention was too much abstracted to admit of his perceiving at all times what was said to him,—for he would not in general reply to questions, unless his attention was roused and solicited by speaking in a loud tone of voice, or by repetition; while the instant he was left to himself, he relapsed into the morbid train of thought, or fell upon his knees into attitudes of prayer. He was good tempered and quite inoffensive. He was originally of a cheerful disposition, and though always of a pious and religious turn of mind, yet he was not more so than was perfectly consistent with his other duties, and a healthy state of moral and mental feeling; and he had not exhibited any unusual ardour in this respect, before the appearance of his insanity. He had lived regularly, never having been addicted to any kind of intemperance,—he had, however, been frequently on duty at the Docks for the greater part of twenty-four hours at a time; and it was understood, that, previous to any appearance of mental disturbance, he had suffered a "fit"—most likely a threatening of paralysis. His sleep was disturbed; and he often talked to himself the greater part of the night. The appetite good, but in his choice of victuals he was indiscriminate; and he would drink his urine if not prevented;—the countenance and eyes suffused and mobile, and peculiarly expressive of agitation and mental excitement. The pulse 70, very small, rather sharp, but easily compressed; the tongue florid, and morbidly clean in the centre, slightly furred on the edges; thirst; skin dry; considerable emaciation; bowels pretty regular, evacuations of a light clay colour. He made no complaint, and said there was nothing the matter with him, and that he had no pain of head or uneasiness elsewhere. The abdomen felt rather tense. He was cupped over the *occiput* and leeched; the loss of from 6 to 8 ounces of blood, caused a tendency to fainting. These measures were repeated occasionally, and he had twice a day a powder of colombo and rhubarb, and farinaceous diet four times a week, and a piece of solid meat the other three days. Under this plan he improved considerably, and gained flesh, and was not so noisy, nor excited.

The delusions, however, remained the same, and as obstinately fixed as ever. On the 17th July, the report was, "excitement continues less, but there is indistinct articulation, and the countenance is dull and heavy with drowsiness; the skin a good deal jaundiced; pulse 75, of tolerable strength, full and softer than formerly. Leeches were applied, a large blister was placed on the nape of the neck, and a purgative was administered; and cupping afterwards employed. The threatening of palsy went off, and he continued to improve greatly in every respect,—being quiet, and inclined to work, and had greatly lost sight of his delusions; and now he allowed that he suffered occasional pain of head. But in July 1831, (a year from his admission) he again became restless, and mischievous, and the speech most decidely impeded; the right side of the body was imperfectly paralysed; a dysenteric attack followed upon this; and, notwithstanding the cautious employment of general and local depletion, he at length fell into fatuity, presenting an appearance of perfect childishness. Having lived in this state for upwards of eight months, he was carried off by severe and uncontrollable diarrhœa on the 17th current. He remained under great excitement to the last moment, and without exhibiting any approach to coma.

Sectio cadaveris five hours after death. The external surface of the cranium presented nothing unusual, and no apparent defect in its phrenological proportions. Upon removing the calvarium, and cutting round the *dura mater* a considerable quantity of serum escaped, probably half an ounce. This membrane covering the left hemisphere adhered partially to the subjacent arachnoid, and being separated and reflected, it presented a smooth, vascular, and semiorganized layer of lymph, of a line or two in thickness, adhering to and lining the whole inner surface of this half of the *dura mater*, descending with it to the base of the cranium, and gradually disappearing in the anterior *fossa*. This adventitious membrane was entirely confined to the left side, and did not extend across the mesial line. The surface of the *dura mater* appeared quite natural, upon stripping off a portion of the false membrane.

There was a copious subarachnoid serous infiltration all over the convex surface of both hemispheres, with apparent thickening of the arachnoid, but no injection of the *pia mater*.

The brain was removed from the cranium and carefully examined throughout, but presented nothing apparently morbid, either in colour or consistence. The nerves were firm, and free from any congestion, as they sprung from the base of the organ. Each ventricle contained about a drachm of fluid. But not less than three or four ounces of serum had collected in the base of the cranium, which seemed to have been lodged partly beneath the *dura mater*, and to have flowed partly from the spinal sheath.

The Chest presented nothing morbid, with the exception of some old adhesions between the pleuræ of the right side; no engorgement of the lungs; and no effusion into either cavity. Intestines distended with gaseous and liquid matters; and mucous membrane at the termination of the ileum highly injected, and that of the cœcum and ascending colon tumid and ulcerated in several points.

Remarks.—Some of these cases, as that of Hunter, Bruce, and Panton, (with those of Simpson, Keith, Dawson, and Robertson, formerly reported,) Vol. xxxvii. p. 436, were to all appearance connected with inflammation of the membranes, as marked by the train of symptoms, and the morbid appearances ascribed by M. Bayle to chronic inflammation of the arachnoid and *pia mater*, in his work on the Diseases of the Brain and its Membranes; and from whose researches we have pretty good evidence that there is a considerable proportion of cases of insanity, (whether monomania or mania seems to be a circumstance little connected with the pathological characters) arising from a state of increased action in the vessels of the arachnoid and *pia mater*.

I have at present several recent cases of insanity, where the physical symptoms leave little doubt of such a state being the cause of the mental aberration; while I have still a greater number where no such symptoms exist, but in which we find nervous excitement without vascular excitement; the pulse every where being feeble, while any cerebral symptoms which may be complained of are only occasional, as vertigo, noises in the head, temporary headachs, &c. and generally much relieved on assuming the recumbent posture. This is more particularly the case with females, and those who have hereditary predisposition to insanity. The true pathology of such cases seems to be as little ascertained as that of many cases of hysteria, with which insanity is so frequently associated, in the female constitution; and which seem to depend, in common with other affections of the nervous system, on a peculiar condition of the nervous organization, which, if influenced by particular states of its system of blood-vessels, as a necessary antecedent to disorder of its functions, is at least influenced by states of the vascular system, which, in most instances, escape our observation, both during life, and upon examination after death, and are certainly little if at all allied to true inflammation. No doubt other diseases affecting the nervous system, as apoplexy and palsy, may be observed, accompanied with a cold pallid surface, weak pulse, &c. and that where dissection will discover most indubitable signs of a previous state of vascular excitement;

and it might probably, therefore, be alleged that the stage of excitement in cases of insanity had existed, though it had passed unnoticed, or that such might exist locally, and without materially affecting the general system. But if we have no characteristic local symptoms, and, in the absence of them, are not to judge of the nature of morbid actions by such general symptoms as may be present, and are to allow no weight to evidence derived from the obvious effects of remedial agents,—then, by what other means are we to arrive at probable conclusions in regard to the nature of certain pathological causes? Do not most chronic inflammations of important organs betray, when accurately investigated, some degree of febrile action, and other appropriate symptoms.

The cases just alluded to do not improve under any system of depletion, but are most benefited by proper moral and mental discipline, along with a due attention to the state of the natural functions, and unfortunately remain benefited only so long as the application of such means can be enforced; since, from the predisposition, the great susceptibility to every passing impression, moral and physical, and the little resolution which such individuals are capable of exerting, we find them constantly returning to a state of mental aberration, and presenting a life spent between intervals of sound mind, healthy actions, and the feelings and the actions of insanity.

The former class of cases, again, requires a steady perseverance in antiphlogistic measures, limited, however, in general, to depletion, local, and such other means as do not depress too much the strength of the general system.

12*th April* 1832.

ART. IV.—*Case of Extirpation of Tumour with Ligature of Common Carotid.* By ALEXANDER EWING, M. D. Lecturer on Surgery in the Aberdeen University, Surgeon to the Aberdeen Hospital, &c. &c. Communicated by Mr LISTON.

JOHN COCK, aged 52, a brickmaker, admitted to the Aberdeen Infirmary with a large tumour situated on the right side of the face and neck, of which he gives the following account. About thirty years ago he received a severe blow on the lower part of the cheek, and next day observed a swelling on the same part about the size of an egg. This did not dissipate, but grew into a tumour, which remained nearly stationary for sixteen or seventeen years. About this time he met with a fall, and hurt his cheek on a stone, after which the tumour increased much in size. Some years afterwards, when at work, he was struck with a bar of iron which carried off a portion of the inferior surface of the tumour, when considerable hemorrhage took place, and the part did not heal up for twelve months. After healing, however, it increased very rapidly in bulk, and within the last two or three years has been still increasing faster and faster, particularly towards the larynx. It is firm and slightly elastic to the feel, and has a lobulated appearance. The colour is much the same as that of his face, except on the top of some of the larger lobes, where it has a whitish appearance, and at two or three places the skin is abraded and a watery fluid exudes. When injured he says it bleeds smartly. It extends from the lower part of the ear over the jaw to nearly the cricoid cartilage below, from this it extends backwards and downwards over the side of the neck, and is bounded behind by a curved line running from the lobe of the ear to the edge of the trapezius muscle. It therefore occupies the lower part of the cheek and all the side of the neck, hanging pendulous down to the clavicle. It feels pretty loose and moveable, except below the angle of the jaw, where its attachments appear to be deep rooted. Its measurements are: From behind the ear, obliquely downwards and forwards to near the cricoid cartilage, 15½ inches; from the angle of the mouth, obliquely downwards and backwards to the most dependant part on the posterior surface of the neck, 15½ inches; from a point half-way between the ear and the angle of the mouth, directly downwards over the tumour, 15 inches; from a point half way between the mouth and the cricoid cartilage, directly backwards over the tumour, 14 inches. The greatest circumference of the tumour is 20½ inches.—Fig. 1. of the Plate gives a view of the tumour previous to operation.

The man's general health appeared good, and he was anxious that the tumour should be removed if possible, as, from its weight, it had become a serious impediment to him, and as it was fast encroaching on the wind-pipe. On examining his pulse it was observed to intermit occasionally, and this at first made me hesitate to operate; but as it was not constant, and as he did not make any other complaint, I thought the operation might be attempted. From the connections of the tumour, particularly about the angle of the jaw,—from the probability of the vessels being both numerous and large which had fed such a tumour for so many years,—and from reading the account of two similar cases, one by Mr Goodlad of Bury in the Lond. Med.-Chir. Trans. Vol. vii. and the other by Dr Stedman in the Ed. Med. and Surg. Journal, Vol. xxxvii., I resolved to tie the common carotid artery as a preparatory step to extirpating the tumour.

11th February. The operation of tying the common carotid was performed in the ordinary manner. But an unusual difficulty presented on account of the tumour encroaching on the line of incision, to obviate which it became necessary, in the first instance, to dissect backwards a part of the tumour, which still impeded the operation by increasing the depth of the wound. As several small vessels poured out blood, the bottom of the wound was obscured for some time, but by clearing it with a sponge and waiting for a little time, the artery was easily secured. In order to expose the artery, I pinched up a small portion of the sheath on the tracheal side of the vessel and opened it with the scalpel, while an assistant drew the outer portion of it towards the sterno-mastoid muscle, and along with it the *par vagum* and internal jugular vein. By this mode of procedure the embarrassment that some surgeons have experienced from distension of the vein was entirely obviated, although, as will appear in the sequel, the vein in this instance was preternaturally enlarged.

The second part of the operation was that of extirpating the tumour, which was accomplished in the following manner. An incision was carried from before the ear along the anterior part of the base of the tumour and joining the wound already made for tying the artery ; the tumour was then quickly dissected backwards for about half its breadth, when another incision was carried from behind the ear along the posterior part of the tumour and crossing below to meet the first incision. This incision, however, was made in such a way as to preserve a portion of integument from the posterior and inferior part of the tumour for covering the wound. The relations of the tumour were such as that it could be removed very easily except near the angle of the jaw, where its attachments were very deep. Before it could be removed from that part, it was necessary to extirpate the lower portion of the parotid gland, to which it was closely united, and to dissect it from under the angle of the jaw as far back as the styloid process of the temporal bone, which was completely laid bare.

When the tumour was removed there was a sudden gush of blood from a number of vessels, particularly about the angle of the jaw, where some large arteries required to be tied, notwithstanding the common carotid being previously secured. To give some idea of the size of the wound, it laid bare the lower part of the cheek and the whole of the side of the neck so as to expose the parotid and submaxillary glands, part of the masseter, the digastric, styloid, part of the mylo-hyoid, and the greater part of the sterno-mastoid muscles. The operation was concluded by raising the flap which was preserved, and uniting it to the cheek by a few stitches of interrupted suture. The whole of the wound was thus covered up except a part of the parotid gland. During the whole of this formidable operation, which the patient bore with the utmost fortitude, not above ℔i. of blood was lost, and when carried to bed he was neither very faint, nor did he complain of much pain. The tumour weighed nearly five pounds.

Vespere, h. 8va. Has been easy and slept a good deal. Pulse full, and intermits every fourth or fifth beat. Carotid of both sides beats strongly.

12th February, noon. Says he feels pretty well, and only complains of a little soreness and tightness in the situation of the wound. Slept a good deal during the night; pulse 80, of moderate strength; intermits occasionally; thirst moderate; skin cool; expression cheerful; lower lip drawn a little to the left side. A little thin reddish discharge escapes below the dressing.

H. 8va. Symptoms much the same. Pulse 90; bowels not open; tongue rather dry. Complains of dryness of throat and tightness about the wound; slight headach.

The napkin which bound on the dressings was removed, and he felt much easier.

Let him have some house-medicine.

13th February. Was troubled with a teasing short cough last night, and did not sleep so well. Makes no other complaint. Pulse 90, weaker, with occasional intermission; mouth rather dry; discharge from the wound very slight; pulsation of the carotid less perceptible; bowels not opened.

He was ordered some demulcent mixture, with tincture of opium, to be taken occasionally if the cough continued.

House-medicine to be repeated *pro re nata.*

H. 8va. Has slept a good deal, and coughed little since he got the mixture. Bowels not yet opened; appears rather weaker, but says he is easy, and that the slight pain of head and breast is gone. Pulse about 110, weak, and intermitting.

The infusion of senna and salts to be repeated, and the demulcent mixture, if required, for the cough.

14th, 10 o'clock, A. M. Has passed a pretty good night, with only occasional returns of cough. Says he has no pain, and feels on the whole comfortable. Pulse 90, of moderate strength, and at present without intermission; tongue rather dry in the centre; expression languid, and face a little sallow; no stool, although he has had three doses of house-medicine. Abdomen rather full; has passed little urine during the night; pulsation of right carotid little perceptible; slight discharge from the wound as before.

Injiciatur enema purgans, q. p.

12 noon. Bowels freely opened twice after enema; stools dark and fœtid; urine also freely evacuated; dressings removed; the whole wound appeared to adhere, forming a line

from the angle of the jaw downwards to near the lower part of the incision for the carotid. There was only one part open over the parotid gland, as the integument left was not sufficient to cover it. The integument on the side of the neck appears full and a little punctured, but no matter can be pressed from it. Two stitches near the lobe of the ear and angle of the mouth seemed to cause a strain, and were cut out. After sponging the wound, it was simply covered with a pledget of cerate, a little lint, and one fold of linen round the head. He was laid with his head and shoulders high, and the head inclined to the right side. The demulcent mixture, with laudanum, was omitted, and the common saline mixture ordered in its stead.

H. 8va. Has slept a good deal in the afternoon. Says he has no pain, and makes no particular complaint, but appears much weaker, and is occasionally troubled with mucus about his throat, which he has difficulty in spitting up. When he expectorates a little, he says he is easy for a considerable time. Pulse about 120, weaker, slight intermission; tongue rather dry; urine passed freely, high coloured; thirst moderate; skin dry.

15th, 10, A. M. Learnt that after last night's visit he grew more and more feeble, with great appearance of sinking. The mucus was accumulating more in his trachea, and the skin was bathed in a clammy sweat. He was therefore ordered a little wine and water from time to time. Is still quite sensible when spoken to, but relapses into stupor. Says he has no pain; pulse very feeble; features much sunk.

A little diluted brandy to be given often.

Died about 1 o'clock same day.

16*th. Inspection.* 1*st. External Wound.*—Slight adhesion had taken place along the edge of the flap, and when this was torn up, patches of pus were found streaked over the side of the neck where the tumour had been removed. The line of incision made for tying the carotid had also partly adhered; and on cutting deep towards the artery we found that lymph had been poured out and become organized so as to cover the artery. I cut out a portion containing the sheath of the artery, vein, and nerve, and dissected them carefully afterwards. The artery was found to be unusually large, but otherwise healthy. The *vasa vasorum* were seen ramifying very numerously along its surface. A plug of fibrin filled the vessel for nearly two inches below the ligature, and a similar one for about half an inch above it. It was found that the artery was firmly constricted by the ligature, and a little lymph covered the noose so as to fill up the notch made by the thread. The vein and *par vagum* were found undisturbed in their relative situation, and the former seemed unusually large.

2*d, Thorax.*—On raising the sternum, we found a large

Dr. EWING'S CASE, P. 18.

Fig. 1.

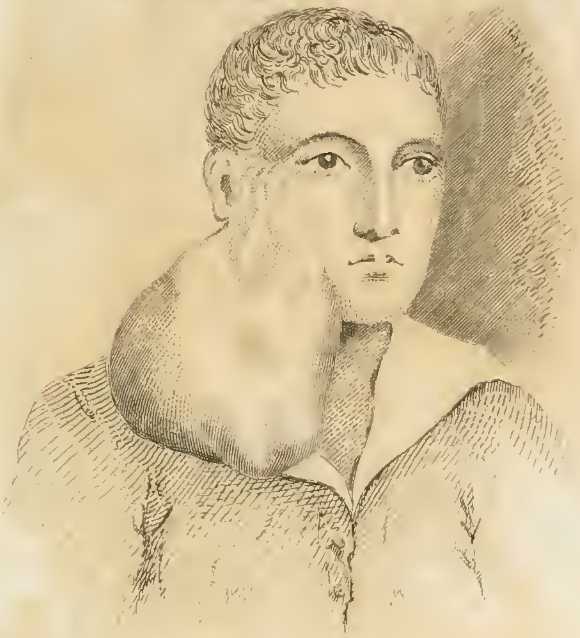


Fig. 2.

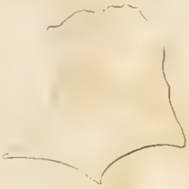


Fig. 3.

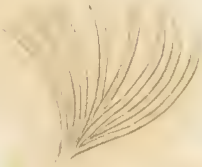
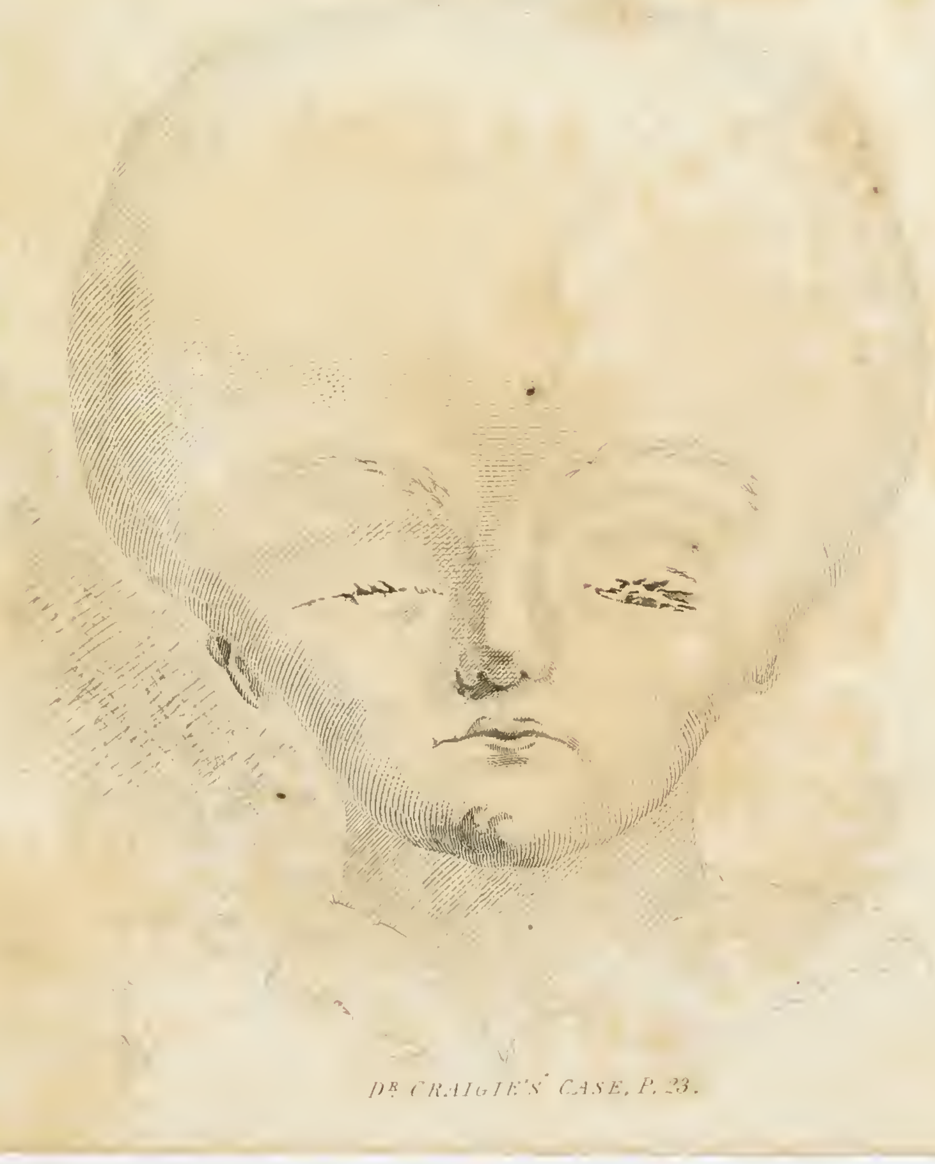


Fig. 5.

Fig. 6.

Fig. 4.



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quantity of fat covering the pericardium, adhesion of left lung to the pleura, and a little pus below the pleura at the upper part of the sternum. On the surface of the left ventricle of the heart there was a portion of false membrane. The right side of the heart when opened, appeared sound. In the left side the mitral valves were a little thickened; and the semilunar valves at the root of the *aorta* very much thickened and corrugated.

ART. V.—*Account of a Case of Chronic Hydrencephalus, with the appearances on Dissection, and Observations on Obliteration of the Sutures in these circumstances.* BY DAVID CRAIGIE, M. D.

ON the 19th November, I had occasion to inspect with my friend Dr Renton the head of a child of 10 months, who had laboured for the greater part of its short existence under symptoms of chronic *hydrencephalus*, or dropsy of the brain.

At the period of his birth, which took place on the 15th January 1831, the head appeared of the usual size, or rather smaller than natural, if there was any difference. The mother, however, remarked that the shape of the head was something peculiar, in being more oblong-spheroidal than that of her other children, and approaching, as she said, to the figure of the small helmet or arched cap worn by firemen. She also remarked a prominent ridge, extending longitudinally over the middle of the head, in the antero-posterior direction, and another crossing it transversely,—the two, evidently from the account, corresponding to the direction of the sagittal-frontal, and coronal sutures respectively.

The infant, however, was otherwise well-formed and in perfect health, and seemed in full possession of all the functions in as great perfection as is found at that early period of existence. He took the breast readily, sucked vigorously, and grew in the most thriving manner, and was a particularly quiet and good-tempered infant, for the space of between three and four weeks. At this period, however, the mother was attacked with rheumatism so severe as to confine her to bed for several days; and during this interval the infant was dressed and nursed by another person, and was seen by the mother only at the periods of suckling. During that time he cried and screamed much, and was very restless; but these complaints were ascribed to the change of nurse, until their continuance led the parents to think the child was in pain. A few days after, when the mother was sufficiently relieved from her sufferings to bestow some more attention on her child, she observed in the site of the anterior fontanelle a soft, elastic, and uniform swelling, which she showed to Dr Renton, who recognized the nature of the case, and recommended her to bathe the surface with a spirituous embrocation, and apply gentle pressure. A few days after, when it was again submitted to inspection, the swelling was evidently increasing, and formed a prominence of considerable size, occupying the situation of the whole anterior fontanelle. The child, nevertheless, continued in singularly good health, so far as the great functions of digestion, circulation, nutrition, and secretion were concerned. He was always ready for the breast, his bowels were regular, the urine copious, and the skin on the whole natural. He continued also to grow, and his person and limbs were plump and well nourished.

It was observed, however, that his vision was extremely imperfect, and while he appeared to distinguish objects in certain lights, and placed in particular positions, he seemed to be quite incapable of recognizing by this sense the majority of objects near him. Hearing, on the contrary, was wonderfully acute; and it was even remarked, that he employed this sense to compensate the deficiencies of vision. Thus he could distinguish his father and mother by their voices from any other person in the room; and his father assured me, that repeatedly, when he approached the child in the most cautious and stealthy manner, and when he had reason to believe that the infant could by no means have seen who was near him, he gave distinct proofs by his gestures and countenance that he knew the person and tread of his father.

In the meantime, after the tumour at the fontanelle had continued for two weeks or a little longer, it began to increase very rapidly, and the whole of the upper part of the head was also observed to enlarge. The forehead was observed to become unusually extensive for an infant of that age, and the whole head was greatly increased in width. In the month of March it measured 20½ inches in circumference, and 12 inches in girth from ear to ear. About three weeks after, on the 20th of April, it measured 22 inches in circumference, and 13 inches in girth from ear to ear; and about the middle of June, when again gauged, its circumference was 24½ inches, and its girth from ear to ear 16½. It was estimated, in short, to be enlarging at the rate of one inch in the course of a month.

It was remarkable, nevertheless, that the child continued to thrive in other respects, and to increase in size. His limbs were plump, vigorous and well-shaped; his person was of average size, and gave no trace of any defect of nutrition; and his countenance even presented the usual rounded fulness of a thriving infant. He continued to take his food well, showing always most partiality to breast-milk, but taking also sago, panado, arrow-root, and gruel, and showing his preference to the order now mentioned. The process of dentition commenced in the sixth month, by the appearance of the two lateral incisors of the superior jaw; some time after the two central incisors of the lower jaw appeared, then three of the upper, and finally, a few weeks before death, the left lateral incisor of the lower jaw.

The process of dentition was thus as early and as regular as in the most healthy infants; and the only peculiarity which was remarked was that, after cutting the gums, the teeth advanced very slowly. After the appearance of the two upper incisors, in the seventh month, he began to gnaw a crust of bread, and continued to do so with ease and relish, till a week or two before death.

For six months after birth, he could move the legs and feet as vigorously and freely as any infant of the same age; but the motion of the superior extremities was more confined. Though he could move the fore-arms, hands, and fingers pretty well, he never could raise them by moving the shoulder and arm higher than the level of the top of the *sternum.* He was also observed to toss the fore-arm and hands to and fro rather restlessly on many occasions, and more especially after the fits of screaming, which took place in the beginning of the second month of his life. At length in the seventh month, when the head had attained a very large and monstrous bulk, it was observed that the left leg was becoming contracted at the ham or the thigh; and this contraction gradually increased so much, that the child never after could extend that leg, or move it with the same freedom as the right limb.

This, I may remark, was an indication of the loss of power in the extensor muscles on the anterior part of the thigh. The deficient power in the arms seemed to depend on impaired power in the deltoid chiefly, the *triceps*, the *supraspinatus*, and *infraspinatus*, and the *levators* of the *scapula.* The testimony of his mother went to show that the child could move the arms in every direction, except towards the head.

When I saw the child in the beginning of July with Dr Renton, his person and limbs were well grown and vigorous for his age; he had the complete use of the muscles of the right leg, and seemed to use the left freely, excepting in the extending motion, as already mentioned; and the arms were occasionally tossed about, but never raised above the neck. His countenance also was plump and fresh-coloured, and the features below the orbits were well-formed and even elegant. The nose, upper lip, mouth, and chin, were particularly well-made and symmetrical, and, with the round well-filled cheeks, might have communicated the idea of the countenance of an infant in perfect health. To these features, however, a remarkable contrast was presented by the part of the face above the orbits, and the unwieldy appearance of the head. The orbits, instead of being deep and overarched by the superciliary ridges, were open and expanded upwards, with the eyebrows placed at an unusual height above the eyes. The forehead formed by the frontal bone was broad, high, and of unusual extent; the lateral regions of the head formed by the parietal bones were prominently extruded, and formed on the left a remarkable projection in the site of the parietal protuberance; the occipital bone was equally extruded and prominent behind; while the upper part of the head between these bones, forming an irregular lozenge-shaped space, was occupied by integuments stretched so tensely over them as to seem ready to burst on the slightest increase of pressure. The whole of this space was soft and elastic, and communicated the distinct sense of fluctuation; while its boundaries were formed by the sharp margins of the frontal occipital and parietal bones, still ununited and imperfectly ossified. The head was at this time so large, that its greatest circumference measured over the parietal and frontal tuberosities was 32 inches; and it was so heavy that it was evidently an extreme and disproportionate weight to the muscular powers of the child. The surface was hot, dry, and glistening; and a large vein, which went in a sinuating or circular bend from the root of the nose over each side of the frontal bone, was so much distended when he cried, that it seemed on the point of giving way.

Notwithstanding this monstrous bulk of the head, however, the general health of the infant continued wonderfully good; and little change of a morbid character could be recognized in the entrophic functions, or in those of locomotion. With the exception also of the imperfect vision and a degree of dullness and restlessness connected with this privation, the sensitive functions were not primarily affected. His hearing continued very perfect and unimpaired; and he could still distinguish his parents, and express his satisfaction at the presence of his father.

In this state, nearly, the child continued till the middle of the month of October, taking food with relish, deriving at least some degree of nourishment from it, and suffering little uneasiness, unless from the excessive weight of the head. About this time, however, the child began to decline in health and strength, and his appetite was occasionally less vigorous; and on the morning of Thursday the 20th of October, about 4 o'clock, he was suddenly attacked by a fit, in which the muscular power he had was completely abolished, his hearing, which was previously acute, disappeared, and he gave no sign of sensibility. He ceased to suck as he had hitherto done, and could no longer swallow; and great quantities of pure water were discharged upwards from the stomach and downwards from the bowels. This condition lasted till about 8 o'clock, after which he began to suck a little, and show other signs of returning sensation. Two hours after he fell into a similar fit, which, however, did not continue quite so long. After this, though distinct fits of loss of sensation did not recur, he began to pine away, and to fall occasionally into states of stupor, distinguished by inferior degrees of sensibility to sound to that which he had in health, and less aptitude for desiring or taking food. The urine, nevertheless, continued as before copious, or at least little diminished in quantity; and the bowels were emptied regularly twice daily.

In a few days after the appearance of the fit or fits, the posterior or occipital portion of the scalp began to be inflamed from the constant pressure of a weight so enormous; excoriation, ulceration, and mortification rapidly followed, and spread over the great part of the occipital region of the scalp, between the two mastoid processes on each side, and extending upwards nearly to the lambdoidal suture. The general strength of the child now began to give way rapidly, though there was still little change in the functions, except that of circulation, in which the pulse became very rapid and weak. He was capable indeed of sucking till a few days before death, when this action was suspended apparently from total loss of muscular power. He continued, however, to take arrow-root or any thing put into his mouth to the last. At length, being much wasted, and completely deprived of motion and sensation, death took place in the manner of a quiet tranquil sleep, without convulsions or other disorder, on Friday the 18th November at half past twelve o'clock at noon.

After death, the following appearances were remarked in the presence of my friends Dr Renton, Dr Adam, and Mr Alexander H. Gibbs. The body was slightly thinner than natural. The face and countenance much as in health. The orbits superficial and expanded, with the superciliary ridge very much elevated, and the superior orbitar plate formed by the frontal bone pushed forwards and downwards, so as no longer to retain its horizontal, but having an oblique position.

The length of the body from the *vertex* to the sole was $28\frac{1}{2}$ inches. The length of the forehead and face measured from the plane of the vertex to the *symphysis* of the chin, $9\frac{3}{4}$ inches. The length of the forehead from the plane of the vertex to the root of the nose, $6\frac{1}{2}$ inches. Transverse width between the parietal protuberances, $9\frac{1}{4}$ inches. Antero-posterior diameter of the cranium from the plane of the occipital protuberance to that of the frontal bone, $9\frac{1}{2}$ inches. The greatest circumference over the parietal tuberosities and that of the frontal bone, 28½ inches. The vertical circumference from the upper tip of one ear to that of the opposite one, 19¾ inches. The vertical circumference between the two mastoid processes, 23¼ inches.—(Fig. 4th, Plate.)

The integuments of the cranium formed a uniformly tense and spheroidal arch; but examination by the finger showed that along the superior and middle region of the head they did not cover the cranial bones, but were extended immediately over the brain for a space somewhat of the shape of the outline. (Fig. 2.) Though the frontal bone, indeed, was ossified, it presented at the margin, which is in healthy *crania* posterior, but what was in the present case the superior, near the middle a notch about an inch long, which indicated the original separation of the two halves of the bone at the median suture,—the continuation of the sagittal. On each side, in like manner, there was a triangular space unoccupied by bone, corresponding to the terminal ends of the coronal or fronto-parietal suture; and in the middle between the two parietal bones was a large space about three inches wide, occupied only by soft integuments tensely stretched between the bones. The whole of this region communicated to the finger a sense of fluctuation particularly distinct on the middle. Here, therefore, I made a longitudinal incision, divided first the scalp, and a fibrous membrane evidently *pericranium*, and lastly, the *dura mater*, on which the brain came into view on the right side, as it afterwards appeared, of the median furrow. An incision through a portion of brain, scarcely thicker than a halfpenny, gave vent to a quantity of serous fluid as limpid and colourless as spring-water; and of this we finally evacuated eight English pints, or four quarts.

After the evacuation of this fluid, we were enabled to examine the brain and its several parts more distinctly. The median *fossa* was still distinct, but much less deep than natural, and the mesolobe or twain-band, *(corpus callosum,)* was recognized, though much attenuated and very lacerable. On each side the internal surface was uniform and void of convolutions as far down as the level of the Sylvian fissure, especially on the right side, below which convolutions began to be visible. On the left side convolutions were remarked, not only below the Sylvian fissure, but behind, near the posterior third of the hemisphere.

The interior of the brain was exposed by means of longitudinal incisions through each hemipshere. The thinness of the cerebral walls was remarkable, the distance between the outer or cranial surface, and the inner or central, being rarely more than two lines, and in some places not above one. At one point, especially, in the right hemisphere marked within by a grey spot, and without by a reddish patch, it was like paper, and quite translucent, and gave way on the slightest touch. One of the gentlemen present thought this corresponded to the part of the scalp at which the sloughing had been deepest; but this was uncertain; for the patch was too far anterior to correspond with the slough, which was chiefly in the posterior lateral part of the head. But, be this as it may, the *parietes* of the cerebral hemispheres were attenuated to an incredible degree; and presented the appearance rather of a large membranous sac than of any thing like the human brain. The exterior surface of this sac was formed by arachnoid membrane and *pia mater*, covering a substratum of grey cerebral matter, about one line or one and a-half line thick, corresponding to the grey matter of the convoluted surface. The interior surface was formed by a thin layer or sheet of white cerebral matter, lining this grey matter, uniformly smooth, and of considerable firmness and tenacity, and traversed by an incredible number of minute blood-vessels, the general direction of which was that of ramification from below upwards on the part behind the *corpora striata*, but in irregular *fasciculi* before. This white matter presented the coriaceous or leathery appearance and tenacity of the cerebral *epithelion*, as described by Reil, much more accurately than in any specimen of the brain which I have examined. It was indeed so firm, that it could be peeled off in shreds by the forceps. But, notwithstanding the extreme distension to which it had been for months subjected, it was in no place ruptured or separated.

At the bottom of this immense cavity the *corpora striata* and optic *thalami* were seen distinctly retaining their original situation, and presenting in several respects their usual appearance. The former were in the shape of fawn-coloured eminences, convex, and rounded before, and tapering behind, receiving between their divergence the optic *thalami*. Their upper surface was, however, a little more flattened than usual, and slightly rough. The optic *thalami* were in the shape of white eminences, not so accurately and regularly rounded as in the healthy state, but sufficiently distinct to show their usual position and figure. One circumstance, however, was remarkable. Both bodies were so much flattened down, apparently by the pressure of the fluid, that they had lost their usual convex appearance, and were placed nearly on a level with the upper surface of the *pons Tarini*, or bottom of the third ventricle.

At the anterior extremity of the third ventricle, the anterior *crura* of the *fornix* were seen distinctly formed and separated about the third of an inch. The *fornix*, however, was itself destroyed; but from the *crura* two thin, round, but firm chords proceeded backwards over the top of the optic *thalami;* and these bodies, from their proceeding over the extremities of the *thalami* to the inferior *cornua*, were evidently the remains of the fimbriated margins of the *fornix*, from which they had been rent by the pressure of the fluid.

The sharp lines at the inner surface of the *thalami* proceeding to the peduncles of the pineal gland were still uneffaced and very distinct; but of the pineal gland no trace was recognized. In its pit, however, was a dilated bladder-like vesicle, which proved on examination to be the upper or anterior end of the valve of Vieussenius elevated by serous fluid contained in the *iter a tertio ad quartum ventriculum.* These were the only parts in the central surface of the brain which were distinctly seen and left uninjured.

The lateral ventricles themselves were converted into immense general cavities, in which no trace of posterior *cornu* could be recognized; while the inferior *cornu* was represented by a large cavity communicating freely with the lateral ventricle.

On removing the white epithelion from the upper surface of the optic *thalami*, the radiating white fibrous cerebral matter of the cerebral limbs, or what Reil terms the *brain-limb system*, (das Hirn-schenkel system,) was beautifully and distinctly brought into view. Among a number of brains, indeed, amounting I am sure to nearly 200, which I have personally dissected since the year 1817, I never saw this part of the cerebral organization so distinctly marked. These white fibres, intermixed with grey unfibrous or granular matter radiated from the spot where the cerebral *crura* penetrate the optic chambers in a fan-like expansion laterally, forwards, upwards, and backwards, somewhat in the manner of the accompanying diagram. (Fig. 3.) The anterior bundles passed into the *corpus striatum*, while the middle one radiated laterally and upwards, and the posterior ones backwards. Another remarkable fact connected with healthy structure was the distinct fibrousness, that is, the disposition of these *fasciculi* in parallel thready lines of white fibrous matter. They could be raised by the forceps, and torn upwards in the direction of the fibrous thready lines, and in that only. Every attempt to separate them in any other direction was abortive; and when cut across, even the ends of the fibrous threads could be recognized. Between these white fibrous bundles was interposed grey cerebral matter, which presented no fibrous appearance, but appeared an aggregation of minute granules.

The cerebellum was perfectly sound, and presented no deviation from the natural characters and appearance. The annular protuberance was singularly firm and solid, but in other respects quite sound. Its firmness, indeed, I regard as a proof of the integrity of its structure. The *crura* of the brain, as well as those of the *cerebellum*, were in like manner sound. The bulb of the spinal chord was in its natural condition, and, like the annular protuberance, was of a degree of firmness and consistence which is rarely observed in the human brain, but which is nevertheless healthy.

All the nerves were in like manner sound, and were even unusually distinct and well-marked. The Gasserian ganglion was large, distinct, and of its usual colour and consistence.

The case now described is remarkable in several particulars, and is important, I conceive, in determining several interesting facts.

1. In the first place, it proves clearly that the notion entertained by many, that in chronic dropsy of the brain the fluid is between the brain and membranes, is altogether erroneous. It has ever appeared to me to be something like an anatomical absurdity to defend the idea of this situation of the fluid; and though it could be shown from several cases recorded that it is not well founded, it is still occasionally maintained by several persons who seem to think this ought to be the distinguishing character of the disease. By what means they imagine the fluid to get outside the brain has not been explained to us; but there they say it is, and there it must be in chronic *hydrocephalus*; and, if not there, the disease, they contend, is altogether different. Others who are aware of the difficulty of getting over the facts of the best observed cases, admit at least two kinds of chronic dropsy of the brain; an external, in which the fluid is situate between the brain and the membranes, and an internal, in which it is situate, they allow, in the cerebral cavities.

Both doctrines I believe to be erroneous; and by the present case, compared with others, and with the history of the progressive developement of the organ, I am convinced of the truth of an opinion which I have long maintained, that chronic *hydrencephalus* in all cases originates as the acute disease in the central surface of the brain. In the present case, though the organ must have been distended to at least five or six times its natural size, the fluid was still distinctly contained within the parietes of the cerebral ventricles. To be quite certain of this fact, I divided the scalp and pericranium by successive separate incisions, exposed and divided the *dura mater*, and then allowed the brain covered by the *pia mater* to come into view. These membranous envelopes were then more extensively divided, and a considerable portion of the upper surface of the right hemisphere was thus brought into view, much distended, communicating a distinct sense of fluctuation, and with the convolutions effaced, in consequence of the expansion of the *sulci*. In this stage of the dissection no fluid escaped except the few drops that trickled from the arachnoid, which was divided in removing part of the *pia mater*; and it was only when a puncture was made through the upper surface of the hemisphere that the fluid of the ventricles began to gush in a clear and copious stream. The puncture was afterwards prolonged into an incision to allow the free issue, and expose the interior of the cavity. The same process was followed in the left side. This case, therefore, shows, in the clearest and most unequivocal manner, that in chronic dropsy of the brain the fluid is first secreted and contained in the inner or central surface, or, in other words, in the ventricles of the brain.

But while I maintain the inner surface in the ventricles to be the original situation of the fluid in chronic cerebral dropsy, I do not mean to assert that there are no circumstances in which it may not get out of this situation, and insinuate itself between the outer surface and the *dura mater*. I can imagine two cases in which this event may take place.

The first is, when the process of serous effusion commences at a period so early in the fœtal existence that it precedes the full developement of the brain, suddenly arrests the process of developement, while the *pia mater* and choroid plexus communicate freely, and prevents, at some point of the mesial plane, cerebral matter from being deposited. From the researches of Tiedemann we know, that, previous to the fourth month of uterine life, the hemispheres are separated by a deep fissure, and that, though they are united in the course of the fourth month or beginning of the fifth anteriorly, they still remain open and incomplete in the mesial plane behind. If, therefore, by any cause the process of serous effusion should commence at this period, it is manifest, that whatever fluid was poured forth within the ventricles would easily find its way to the exterior surface; and that, as its presence arrests the further growth of the hemispheres, their internal or mesial margins would remain apart till the death of the individual; and in this state would be found on inspection.

The second case in which the fluid might be found on the outside of the brain as well as the inside, is of a much more precarious character, and depends on so many concurring circumstances, that it is difficult to give a positive opinion about it, and becomes merely a probable result. It is when the process of effusion has advanced to such an extreme degree as to lacerate the upper and most attenuated part of the hemispheres. This, however, is by no means so easily effected as might be imagined. The extreme tenacity of cerebral matter, with the slow and gradual nature of the process of effusion, distends the brain so generally, that, if the event ever occurs, it must be a rare one. I confess myself ignorant of any unequivocal case of this mode of termination; and I should rather think, from what I have seen of such cases, that death must take place previous to its occurrence.

I know it may be said that this has been seen by respectable observers so often, that it argues presumption to doubt the accuracy of the statement. To this I must reply, that it is extremely natural, in the hurry of dissections of this kind, to cut at once into the brain, which, from its extreme tenuity, is readily overlooked, or confounded, at least with the membranes.

2. The second general result which flows from the case now related, concerns the obliteration of the convolutions. The upper, anterior, posterior, and lateral surfaces of the hemispheres were quite uniform, and altogether void of these irregularities. This change consisted in the *sulci* being pushed up to the level of the *gyri*, so that, the former being deficient, the eminences of the convolutions were effaced. This change has been remarked by several observers, and has been especially employed by MM. Gall and Spurzheim as a means of demonstrating the structure of the convoluted surface. It is not my intention in this place to enter into the merits of the opinions of these physiologists; and I wish to confine myself chiefly to matters of observation, and such deductions as flow directly and naturally from them. I shall merely, therefore, observe, that it does not appear to me, that the fact of the convolutions being effaced in cases of great effusion of serum into the cerebral cavities, throws any more light on the arrangement and structure of these eminences than ordinary examination after they have been divested of the *pia mater.* The grey matter of which they consisted formed a thinner and perhaps a more extended layer than in the healthy state; but its interior arrangement was the same. It was also remarkable, that, while the white matter of the inner surface of the hemispheres must have been subjected to a very great expanding force, and must have been much distended, in no part could any rupture or derangement of constituent parts be recognized; nor was there any trace of disappearance, removal, or absorption of the cerebral substance.

3. A third general result, which may be mentioned, is the singularly small influence this enormous collection of fluid had on the nutritious function. The infant digested well, his blood circulated perfectly, the different secretions were on the whole not strikingly deranged, and he grew and throve, and, in short, seemed well nourished excepting in the *cranium* and its contents alone. Even the countenance was of the natural proportions, and exhibited no trace below the transverse or cranio-

facial suture, of the wasting and defective nutrition of organic disease. It constitutes one of the many facts which show the small influence which the hemispheres of the brain exercise on the process of nutrition. Though the child occasionally brought up his food like other infants, vomiting never occurred as a conspicuous or prominent symptom; the appetite continued good till the 18th or 19th of October, when it began to be a little impaired; the bowels were emptied regularly twice daily; and the urinary secretion continued either to be abundant, or at least not affected in an appreciable manner. The annular protuberance, *cerebellum*, and bulb of the chord being sound and unaffected by the accumulated fluid, may have tended to maintain the nervous influence over the vital and entrophic organs unimpaired. The origins of the nerves also, excepting those of the optic, viz. the geniculate bodies and quadrigeminous eminences, were exempt from any compression from the fluid. Indeed, had it not been for the extreme weight and unwieldiness of the head compared with the body, the child seemed to suffer little; and though an existence prolonged under such circumstances seems only another form of misery, it was evident, that not the disease, but the irritation from the sloughing, and the injury thereby inflicted on the system, had accelerated the fatal event.

It is nevertheless to be remarked, that a distinct disturbance of the entrophic functions took place on the 20th October, during the fits of quietism by which the child was then attacked. He ceased to suck,—seemingly from want of power; and constant gurgling discharge of fluid took place from the stomach, and also a similar gush from the bowels, which only ceased at the termination of the fit. These actions indicate the sudden affection of some part of the brain which had not previously suffered; but of the nature or seat of this lesion, not even dissection afforded us any satisfactory explanation, further than by referring it to the progressively increasing pressure having at this time attained a degree which began to betray itself in disorder of the alimentary function.

4. In the fourth place, the present case illustrates the nature of that process which has been improperly denominated *separation or disunion of the sutures*, as a consequence of chronic hydrencephalus. This alleged separation has been confidently stated by SAUVAGES as a symptom of chronic hydrencephalus; and though its truth was early controverted by GAUDELIUS, and afterwards by SANDIFORT, on the faith of several authentic cases, it has been repeated by numerous authors and teachers of respectability, as Portal, Monro, &c. The accuracy of the statement, I confess, I always doubted, notwithstanding the weight of authority by which it was supported; and to me it appeared an anatomical impossibility,

how any thing like separation could take place in the unions of bones so perfect and firm as the cranial sutures, in consequence of such a cause as the progressive effusion of watery fluid. From the present case, and others with which I have become acquainted in various stages of the process, I conceive myself justified in denying the separation entirely, and furnished with the means of explaining the actual nature of the process.

It is impossible that any separation of sutures can take place, for no sutures, properly so denominated, exist at the time at which the fluid begins to distend the bones. The sutures, it must be remembered, are only formed in situations in which the margins of contiguous bones are approximating, are permitted to be in contact, and are thereby enabled to deposit bone in alternate lines, or *denticuli*, reciprocally receiving and received by each other. This approximation, however, is not permitted to take place, till, as I shall show, a very late period of the disease, when, instead of the junction by proper suture, it consists of ossification of the intermediate membranes. As the fluid continues to be poured forth, and to distend the cerebral walls, the bones still apart in the early period of existence, are not only prevented from approximating by their margin, but are truly drawn asunder, and are held together, though not in apposition, by skin, *pericranium*, and *dura mater*. Thus, in a former case detailed in this Journal, (Vol. xxxii. p. 51 and 57,) in which a deep furrow extended from the middle of the frontal bone, backwards to the occipital, that furrow was formed by the scalp, *pericranium*, and *dura mater*, tensely stretched between the receding bones. In that instance, indeed, the effusion had not proceeded to so great an extreme; and hence, neither the gaping of the cranial bones, nor the distension of the cranium, was so great as in the present case. But it had proceeded sufficiently far to prevent the serrated union by suture; and the intermediate membranes were in the process of ossification. (Med. and Surg. Journal, Vol. xxxii. p. 53.) In the present case, in which the subject was younger, and the disease had attained a more advanced period and more exquisite degree, the interval between the bones was much wider, and the membranes presented no trace of ossification. In both cases the margins of the cranial bones were void of serrated edge; and whatever might be the medium of union ultimately, it was manifest that the serrated, or that by suture, could not take place.

In the paper now referred to, I have advanced the conjecture, that, in cases of the present class, the natural process of ossification is suddenly checked; that, consequently, the union by suture cannot be effected, or becomes imperfect, irregular, and one of mere contiguity; and that the cranial bones are eventually united by ossification of the *pericranium* and *dura mater.* This view, I conceive, receives as full demonstration as it can admit by the case now described, taken along with others recorded by authors. From the case detailed in the present paper, we learn in what mode the ossific process is suspended, the bones are drawn apart, and junction by suture is prevented. From the case formerly recorded, we learn the manner in which the normal and usual process of ossification is compensated by another which is neither usual nor normal, that of ossification of the membranes ; and from the cases recorded by authors taken in mutual comparison, we recognize the explanation of the anomaly so often noticed,—the want of suture or true serrated junction.

The last fact, as the most important in the explanation now given, deserves some attention.

I may begin with remarking, that a total want of the sagittal suture was originally observed by EUSTACHIUS, who believed then that he was the first who noticed the circumstance. " Ego enim eam, quamvis hactenus nemo animadverterit, frequenter deesse invenio, et paucis ante diebus in publico theatro, quindecim ejus formæ calvarias ante oculos omnium cernendas et examinandas exposui in quibus obelaea sutura (the sagittal suture) penitus deest, nullumque vestigium sui ostendit, quamvis aliæ suturæ sint concinne et eleganter exculptæ." It is unfortunate that EUSTACHI gives us no details on the size or figure of these sculls ; but, as he afterwards remarks, that this deficiency is chiefly found in monstrous heads, it is not unreasonable to infer that several at least of them may have been the *crania* of hydrocephalic subjects. To this statement, however, I do not attach much importance, unless as a fact observed by EUSTACHI in the history of cranial ossification.

The first observer of any note by whom the circumstance is remarked among others, is GUY RIEDLIN, a physician of Augsbourg, who flourished about the beginning of the 18th century, and who, among other facts not particularly interesting, has consigned in the German *Ephemerides* the history of a man who had laboured for 24 years under the symptoms of chronic hydrencephalus. In this person the *cranium* had attained the enormous size of 33 Rhenish inches ; and the sutures were so completely closed that in some places no trace of them could be recognized. The cerebral ventricles are said to have been so much distended that any of them easily admitted two fists ; and the brain itself was so much attenuated that it was nowhere half an inch thick.* This case, I remark, bears in these respects a close resemblance to the one recorded in the beginning of this paper.

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* Ephem. Nat. Cur. Cent. 1 and 2, Obs. 29.

The second instance of this nature is particularly noticed by Cornelius Trioen, a learned and diligent Dutch physician, who flourished at Leyden about ninety years ago, whose taste led him to study surgery fully as much as medicine, and to whom we are indebted for several valuable medico-chirurgical observations. Among these he describes and delineates the *cranium* of a young girl, who died at the age of 14 with the symptoms of chronic *hydrencephalus*, induced originally at the age of 9 months by a blow on the head inflicted some weeks before, and which was followed by fatuity and unusual enlargement of the head. After death, the sagittal and frontal sutures were found obliterated, two Wormian bones were in the situation of the anterior fontanelle, and the coronal suture imperfect at the centre, and complete only at its temporal ends. In this case there can be no doubt that the increasing effusion of fluid had caused the recession of the parietal bones, had suspended the process of ossification at their mesial margins, and, keeping them united by membranes only, had ultimately been the remote cause of their union by the ossification of these membranes.*

The next instance to which I shall advert is the scull of an infant of 7 or 8 years, exhibited in 1733 by Hunauld to the Royal Academy of Sciences at Paris, and in which, neither externally nor internally, was any trace of suture visible.† Though we have no information regarding the previous history of this case, I think the circumstance of early life is sufficient to show that the obliteration of the sutures was not effected in the usual course of ossification.

In the collection of Leber also, at Vienna, there is mentioned in Schwediauer's Catalogue (p. 65, 66,) the scull of a boy of 14 years, in which all the sutures were so closed and obliterated that no trace of them could be recognized; Berger mentions the cranium of a boy of 12, in which the coronal and sagittal sutures were obliterated, and scarcely any trace of the lambdoidal was visible; and Timmermann saw in the possession of Scherer the *cranium* of a boy of 8, in which the sagittal suture was obliterated.

Sandifort further adduces the instance of a woman rather young, *(junior femina)* in whom, though all the other sutures were observed, the sagittal was wanting, and appears never to have existed; and of an infant, with milk teeth, in whom it was also wanting; and Lentfrinck, a Dutch author, quotes the example of a young man of 20 cut off by phthisis, in whom the sagittal and coronal were wanting.

The next good example of the premature consolidation of the cranial bones from membranous ossification is recorded by ZINN, in the second volume of the Gottingen Transactions. "In a girl of eleven years," says this anatomist, "all motion was so abolished by universal palsy, that, excepting the motions of the involuntary muscles and those contributing to expression, voice, and deglutition, all motion and sensation were gone. The mental functions, however, and the organs of the senses, were unimpaired. On opening the head after death, the bones of the cranium were found so consolidated, that neither of coronal nor sagittal suture was a trace left. The temporal bones had become firmly united with the occipital, and also with the sphenoid bone in many places. Can the palsy be ascribed to the consolidation of the cranial bones? I have myself witnessed the skeleton." *

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* Cornelii Trioen, M. D. Observationum Medico-Chirurgicarum Fasciculus, Lug. Bat. 1743. 4to.

† Histoire de l'Academie des Sciences, 1734. p. 59. Edit. Amsterd.

I think every one who knows the period at which, in the natural process of ossification, the cranial bones are united, must agree with me in thinking that sutures, properly so denominated, never existed in the head of this little girl; and that the consolidation remarked by ZINN was the result of ossification of the *pericranium* and *dura mater.* The question proposed by so acute a person as ZINN, the author of the experiments on the influence of the *cerebellum* on the vital functions, and of the best treatise extant on the structure of the eye, only shows how easy it is in the investigation of the causes of disease to mistake a simultaneous effect for the immediate cause of the malformation. A very moderate knowledge of pathology is sufficient to show that the palsy did not proceed from the consolidation of the cranial bones, but from the disease of the cerebral membranes, which caused the serous effusion; and that the consolidation of these bones was itself a remote effect of this effusion.

The next example which I shall mention is one recorded in the Inaugural Dissertation of Charles D. Ekmark, dated Upsala, June 1, 1763 †. This occurred in the person of a woman of 45 years, who had from infancy laboured under symptoms of chronic cerebral dropsy. At the age of 6 months the head began to enlarge, and steadily increased to such a magnitude, that at the age of 7, when her stature was that of a child, the head had the appearance of an adult head, and the child could not at this age support it erect, or stand on her legs, but continued constantly in bed. The powers of the constitution, however, were so vigorous, that she underwent, without serious injury, the measles, small-pox, and a species of intermittent fever; and, with the exception of toothach and frequent belly-ach, recovered a certain degree of health. The appetite was good, and she took food with relish. She even menstruated about the usual period of puberty, though the discharge was more scanty and paler than usual. She had the possession of her external senses, and some slight glimmerings of reason. She was susceptible of pity, anger, and affection; and she gave distinct marks of having a sense of religion.

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* Commentarii Societ. Regiæ Gottingensis, Tom. ii. Gottingæ, 1753, p. 366.

† This is the case commonly mentioned as that of Auriville. This, however, is a mistake resulting from the practice of the foreign Universities, in which the thesis is often quoted as that not of the author, but of the president of the faculty. In some instances it happens, that the thesis has been actually written by the president or some of the professors, but in others it is not. There is no proof that it was written by any other person but the alleged author in this case; and I therefore refer to it as his. Eduardi Sandifort, Thesaurus Dissert. Program, &c. Vol. ii. Rotterdam, 1769, p. 325, 4to.

In the scull of this woman, among other appearances, it was observed that the sutures, that is, the lines of junction, were completely closed, and that in several points the bones were immovably consolidated. The coronal suture observed its usual course, but was filled with small Wormian bones, the smallest being at the sides most intimately united, and the larger more loosely, like distinct bones, at the site of the frontal suture. The parietal bones had completely united before, so as to form *a uniform surface within and without*; behind they presented a loose suture consisting of small teeth, from the posterior extremity of which went to the right and backwards a similar suture terminating in solid bone. The whole of the lambdoidal suture was left, also occupied with small or Wormian bones, especially where it joins the squamous or temporal parietal suture; and from its convexity proceeded two other sutures to the parietal bones,—inclosing a separate bone four inches long, joined in one small part with the right parietal.

This case proves two circumstances,—first, that consolidation of the cranial bones is effected in chronic hydrencephalus chiefly by ossification of the membranes; and, secondly, that ossification may be established from several isolated points, forming in this manner an assemblage of Wormian bones.

In the description of the two very large hydrocephalic sculls preserved in the Anatomical Cabinet of Leyden by SANDIFORT, in the first book of his *Exercitationes Academicæ*, it is not mentioned whether the sutures were obliterated or not. In one case the parietal bones were totally wanting, though no conjecture is offered as to the cause of this deficiency. I must not omit to notice, however, that SANDIFORT describes in his second book a *cranium* of still greater dimensions shown him by ROQUETTE, a lecturer on anatomy and surgery at Haarlem, in which all the sutures were observed, and in their course various small Wormian bones, even in unwonted situations.

In another very large scull also, in the possession of ROUGEMENT, teacher of anatomy at Bonn, and which was procured at Bologna, he found not only the sutures still persistent, but the sagittal continued through the middle of the frontal bone. It is, however, manifest, that these junctions were not sutures, properly so denominated, not the serrated suture, but merely lines of junction, and very often so imperfect, as to be interrupted by numerous Wormian bones. I mention them, nevertheless, because they confirm the general fact of peculiar and irregular ossification, and show, that, when disturbed from its usual course, the process may be established at numerous isolated points, and advance simultaneously to a greater or less degree of completion.

It must be remarked, nevertheless, that not every instance of disease and obliteration of the cranial sutures is to be ascribed to the previous existence of *hydrencephalus* and the membranous ossification of the skull. It is only when it takes place in sculls of unusual size, in some manner deformed, and at a period of life unusually early, that the closure can be regarded as originating from the cause I mention. I therefore do not regard all the instances of obliteration of the sutures enumerated by SANDIFORT in the 7th chapter of the third book of his Anatomico-Pathological Observations as referable to this head. SANDIFORT, indeed, has assembled the whole of them, natural and preternatural, in one group, and thereby, without aiming at any distinction, conveyed the erroneous idea that it was a uniform, or at least not unfrequent, result. The principal object of these observations is to draw some distinction between those instances of obliteration which seem the natural result of a high degree of the ossific power, and those which are the consequence of ossification of the membranes, rendered necessary by the recession of the bones, and the early interruption of the natural process of ossification. It is on this account that, though I mention the cases of Hunauld, Leber, Berger, and Scherer, I entertain some doubt whether they can be justly ascribed to the membranous ossification; and I have no hesitation in saying, that the two cases mentioned by LANZONI, the two dissected by ALBINUS, the scull possessed by Albinus without sagittal suture, that possessed by VAN DOEVEREN, and that of the negro slave killed in 1572 at the siege of Haarlem, all referred to by Professor SANDIFORT, cannot be classed among those resulting from membranous ossification, but are rather to be regarded as the consequence of a high degree of the ossific process.

Similar examples of large *crania* to those already mentioned are occasionally met with in public and private collections. I have seen in a collection of the latter kind in this city some years ago, a very large scull, in which the coronal and sagittal sutures were very nearly obliterated. This collection was broken up and sold; and I have lost sight of the further history of the preparation.

In the Museum of the Royal College of Surgeons of this place, there is an unusually large hydrocephalic scull, in which the sutures are still distinct. There is a sort of double sagittal suture; or rather, to speak more accurately, one line of junction on the right of the mesial plane runs from the occipital to the frontal bone, while another, interrupted or obliterated at one or two points, runs between the same parts on the left of the mesial plane. Between these are several Wormian bones, the result of ossification commencing in isolated points. By Dr John Campbell, one of the Surgeons to the Royal Infirmary, by whom this scull was presented to the College, I am informed, that the head of the person from whom this cranium was obtained was of the usual size at birth; that the child was, however, unable to manage it; that about 6 months after she screamed violently for several days; and in the meantime the head enlarged so rapidly, that in the course of 8 or 9 days it attained its greatest size. It was firmly ossified at 12; and she died aged 21. This woman,—who had the free use of the hands, yet never could walk, but moved the legs by raising them over each other,—was irascible; susceptible of pity; and she had a good memory, a sense of religion, and distinct ideas of right and wrong.

I am indebted to Mr Liston for the examination of a very beautiful and exquisite specimen of hydrocephalic *cranium*, extremely deformed, and perhaps the largest in this country. The individual to whom the scull belonged was early attacked by the disease, and died at the age of 25. The frontal and the parietal bones are remarkably and excessively enlarged; and, in consequence of the patient having lain chiefly on one side, the lateral protuberance and convexity of the parietal bones is so unequal, that the scull seems as it were twisted. The protuberance of the right parietal is more prominent and more posterior in situation than that of the left. In this scull the coronal suture is entirely obliterated on the left side and in the middle, and is perceptible only at the right temporal extremity. It is, indeed, so firm, that it would be utterly impossible to detach the frontal from the parietal bones, without breaking either or both. The sagittal suture is like that of the cranium of the College of Surgeons in two lines at the anterior end, at which, however, it becomes indistinct. The course of the lambdoidal suture is occupied by a series of isolated bones, varying in size from a third of an inch to one inch in diameter, and amounting in number to nearly 200. These bones must have been the result of the ossific process commencing in an equal number of minute points in the membranes; and, if the individual had lingered a few years longer, they would have been first united to the occipital bone, and then, in all probability, to the two parietal,—obliterating in this manner the lambdoidal suture exactly as the coronal has been obliterated.

In the collection of Mr Syme, also, of this city, there is a very excellent specimen of hydrocephalic cranium occurring in the fœtus, and still chiefly in the membranous state. It is valuable in illustrating several of the statements already made regarding the mode in which the bones recede, and ossification proceeds, in such circumstances. The cranium, though natural in breadth, is extremely oblong, so that its antero-posterior longitude is at least eight inches. This great antero-posterior elongation is occasioned by the hindward separation of the parietal bones from the frontal, and in a greater degree by the occipital from the parietal. And so extensive is this, that the posterior part of the cranium consists of a large osseo-membranous bag, projecting beyond the usual posterior plane of the scull. At the bottom of this sac the occipital bone retains its situation, while the dilated membranous sac itself presents numerous minute specks of bone, which indicate centres of ossification, and which would have formed an equal number of Wormian bones in the course of the lambdoidal suture. A few minute bony specks are in like manner visible in the membrane, between the frontal and parietal, and the two frontal bones. In this case, therefore, though the distensive force of the contained fluid had separated the cranial bones to a very great extent, and had retarded, and would probably have done so in a greater degree, the extension of these bones by accretion to their lateral margins, it had been unable to check the ossific process of the *pericranium* and *dura mater*, and which was, therefore, manifested in the incipient production of numerous ossific centres. These membranes, between the occipital and parietal bones, doubtless presented the incipient stage of the process, which had attained so great perfection in the preparation of Mr Liston; and it seems certain, that the numerous osseous specks in the osseo-membranous *cranium* of the collection of Mr Syme are the germs of the Wormian bones in that preserved in the cabinet of Mr Liston.

In the museum of Dr Thatcher there is a specimen of hydrocephalic scull obtained from a child of two and a-half years old. The remarkable circumstances in this preparation are the symmetry of the *cranium*, which, though a good deal enlarged, is uniformly so on each side,—and the advanced stage of the process of ossification. The two parietal bones are united with each other, and with the occipital; and there is only one Wormian bone at the apex of the latter, in the reentrant angle between two former. These junctions, nevertheless, though not obliterated, do not present the genuine serrated suture with alternate dove-tailed teeth, but merely a line of juxtaposition. The anterior fontanelle is still open and membranous; and there are one or two apertures in the right parietal bone, the result of incomplete ossification.

Upon the whole, I conceive it may be justly inferred, that there is, strictly speaking, no opening of the sutures in chronic *hydrencephalus*; that the bones, indeed, are separated, and the regular process of ossification is disturbed and suspended; and that in its place the *pericranium* and *dura mater* assume an ossific action, and in this manner deposit between them points of osseous matter, which eventually unite the bones, and close the scull, but do not form genuine sutures.

Art. VI.—*Case of Chronic Hydrocephalus treated by puncture.* By R. C. Russel, Esq. Surgeon, Gallowgate-Head, Aberdeen.

Christian Littlejohn, whose age is 8 months, was affected with chronic hydrocephalus. Her mother observed a few days after birth a greater separation of the bones of the head than natural, after which its size began to increase very rapidly. Eleven weeks after birth, I was requested to see her along with my friend Mr Moir, Lecturer on Anatomy in this place. By that time the head had acquired an enormous size; it measured in circumference 23 inches, and from the meatus of one side to that of the other, across the vertex, 15½ inches. There was a constant rolling of the eyes, and squinting, but there was no unusual dilatation of the pupil, which contracted readily on the application of light. The bowels were irregular, and she was affected with slight startings during sleep. Various methods of treatment had been adopted, viz. compression, blisters, mercury, diuretics, &c. but in spite of these measures the head continued to increase. As the general state of her health appeared good, I resolved upon trying the operation which has been recommended, of gradually discharging the water by puncture. The operation was accordingly performed on the 25th August, six days after my first visit. The instrument which I employed was a trocar such as is used in hyrocele. I introduced it about half an inch in depth on the right side of the anterior fontanelle, and three ounces of serous fluid were discharged through the cannula. A piece of adhesive plaster was placed over the puncture, and a roller applied around the head. She slept well that night, but next day she was slightly feverish, and continued so for two days afterwards, when she appeared as well as before the operation.

On the 4th day of September, the puncture was repeated in the same manner on the opposite side, and five and a half ounces of turbid serum were evacuated, containing several flakes of lymph. No unfavourable symptom followed. On the 15th September, the size of the head appeared much lessened, and was found to have diminished 2½ inches in circumference, and 2¼ across the vertex. Ossification had made considerable progress. A large opening in the frontal bone, which extended from the bregma to the nose, was completely filled up, while those in other parts were much diminished. In again using the trocar, only an ounce of fluid was discharged. On the 5th of October, I inserted the trocar near to the part I first punctured, and introduced it as far as the meninges, but only a half ounce of fluid passed through the cannula; I therefore reintroduced it, and entered it obliquely, about an inch and a-half in the direction of the ventricle, and upon withdrawing it, nine ounces of serum were discharged in a continued stream. The wound was closed, and a roller applied tightly around the head. Immediately after the water was discharged, the pulse became feeble, and she was faint and weak, but during the evening she fell asleep, and awoke an hour afterwards apparently much refreshed. To my great surprise, not one unfavourable symptom followed. The pulse indeed became more regular than it had hitherto been, the startings during sleep were not so frequent, and she appeared in other respects better, with the exception of her bowels, which continued to discharge stools of a dark green colour. She continued to improve for nearly three weeks afterwards, when her former symptoms gradually returned, and an obscure fluctuation could be perceived by pressing with the fingers above the anterior bregma. Small doses of calomel were administered till the mouth was affected, which shortly produced an absorption of the fluid, and a removal of all the hydrocephalic symptoms. Since then, she has had no relapse, and has enjoyed almost uninterrupted good health. She is a stout and lusty child, and her size uncommonly large for her age. The bones of her head are now complete, excepting the anterior opening, which is closing. The size of the head is less by 4 inches in circumference, and 2½ across the vertex than it was previously to the first operation. With the exception of Dr Conquest's two cases, I am not acquainted with another in which the ventricle has been punctured for the relief of water in the head. In the cases of Rossi, and Dr Vose, the water between the membranes only was evacuated. An opinion is entertained by several, that this operation is not only a very dangerous but an extremely doubtful one. I trust, however, that the result of these cases, will prove that such fears are in a great measure groundless, and that, under favourable circumstances, the chance of cure is such as to justify its performance.

Aberdeen, February 4th, 1832.

ART. VII.—*Three Medico-legal Cases of Homicide, in which Insanity was pleaded in Exculpation.* By ALEXANDER WATSON, Esq. F. R. C. S. E.

IN each of the three following cases the charges of murder were clearly proved against the pannels without any difficulty. In the medical part of the evidence respecting the murders, there was no circumstance of particular interest. But regarding the other important question, the sanity or insanity of the prisoners, and their responsibility as moral agents, there was certainly considerable difficulty, and room both for doubt and discussion. The particulars of these cases are shortly as follow:—

CASE I.—George Waters, a ship-carpenter, about 30 years of age, who lived in Leith, was tried before the High Court of Justiciary here on the 9th November 1831, for the murder of his son, a boy of 7 years of age, by means of a common table-fork.

For some time before the murder, Waters had become unsteady at his work, and had acquired habits of dissipation, which proved equally injurious to himself and his family. In consequence of his frequent state of intoxication, and his outrageous conduct on such occasions, he was often excluded from his own house by his wife, who apprehended danger to herself or her children.

His conduct had several times given distinct proofs of mental derangement for short periods. In one of these he was taken to the Police Office in Leith, where he seemed to those who saw him to be labouring under *delirium tremens.*

On the night previous to the murder, Waters had been much intoxicated, and was refused admission into his house. In the morning he returned and was admitted; he got some food from his wife, and then went out and got some whisky.

About half past 12 o'clock on the day of the murder, he found his son and some playmates amusing themselves near his own house with a small rusty fork which belonged to the boy. Waters at this place took hold of the boy by the hand, and told him he wished him to accompany him to Edinburgh to visit his aunt, who lived there. The boy was at first unwilling, but afterwards consented to go, by the hope of reward, which was held out to him.

The father, leading his son by the hand, now proceeded towards Edinburgh by the Bonnington road, and was observed to take the fork from the boy and put it into his pocket. He proceeded towards Stockbridge, but before arriving there, he departed from the road at Saxe Cobourg place, turned to the north, and crossed the Water of Leith to the fatal field, which is situated at a short distance to the east from the old mansion house and garden of Inverleith.

Waters was seen by several persons, both immediately before and after the murder, all of whom, as well as those who saw him on the evening of the same day, thought him to be in a state of derangement from his wild, frantic appearance, his incoherent talk, and insane gesticulation. After he committed the murder he was seen hovering about the place where the body lay. Two persons, who afterwards found the body of the boy, observed him alternately look into the ditch where it was lying—move his body backwards and forwards—and place his hands across his breast; from which they concluded that he was " a poor man in a state of derangement."

In the afternoon and evening of the same day he was seen at Craigleith and Cramond speaking and acting in an incoherent manner. In particular, he brandished the fork in his hand—took off part of his clothes on the high road—trampled upon them, and said he was an honour to his country, being Sir William Wallace, and waited there for his title, which was to come from Heaven.

Early next morning he was found in a stair at Stockbridge, speaking incoherently and so loud that he alarmed the inhabitants. Some of these persons had heard of the murder of the boy, and the description of Waters, which this person in the stair seemed to answer. They accordingly accused him of the deed, which he at once acknowledged, and said that he was the unfortunate man who did it. At the Police Office, to which he was taken, he narrated in a circumstantial manner how the murder had been committed.

In the forenoon of the same day on which he was taken to the Police Office, being the day after the murder, he was visited by Dr Spens and myself. He had then become more composed; and, in conversation with him, he spoke with great regret of the death of his son, and said he could not conceive how he could have been guilty of such a crime. He seemed to be a man rather of weak intellect, but showed no indication of insanity, or of any mental hallucination.

The body of the unfortunate boy was examined by Mr Brown and myself on the day after his death. We found his death to have been occasioned by several small wounds which penetrated the heart. These wounds had caused a fatal effusion of blood into the pericardium. There were other punctured wounds which had penetrated the abdomen, by which blood was also effused into this cavity.

By the evidence adduced in Court, the death of this boy, David Waters, by the hand of his father, was clearly established. The other important question, regarding the insanity of this unfortunate man at the time of the homicide, was also considered by the Court and Jury to have been sufficiently proved. He was accordingly acquitted from the charge of murder, and ordered to be confined for life.

By the testimony of the witnesses then brought forward, Waters had been a man of peculiar and weak mind. He had suffered several domestic calamities; and had been at times in a state of mental derangement. All those who had seen him on the morning of the murder, said that he had a fierce and excited look; his conduct, both immediately before and after the murder, was that of an insane person, and in this light had attracted the particular attention of the persons who saw him.

In the slaughter of his own unoffending son, to whom he was much attached, we have a presumptive proof of insanity. His conduct, too, on the evening of the same, and morning of the following, day, affords strong concurring evidence of mental derangement. His conduct at Craigleith, at Cramond, at Stockbridge, and his confession of the deed, are all very conclusive of this. The confession of the crime, I conceive, may be considered as an evidence of insanity of considerable weight. Not that every man who confesses a murder is to be considered insane; but, by this, taken along with other circumstances, as when the individual does nothing to conceal the deed, but, on the contrary talks of it, and attempts to give reasons for the propriety of his conduct, we have a strong indication, in its natural undisguised simplicity, of the deranged condition of the intellect. From the perversion of his judgment, and the delusion occasioned by the unsoundness of his mind, the maniac is insensible of his crime. This sort of confession has generally been made by individuals who have committed homicide from insanity. In short it is so universal in such cases, that some very distinguished medical jurists * consider this confession alone to be a sufficient test of insanity.

In many cases we have also negative evidence of this state of mind, from the absence of motive and premeditation of design; as well as, from the perpetration of the crime having been upon one, towards whom the assassin had not, and from natural ties could not, be conceived to have formed so great a malice, if he had been of sound mind. No doubt, therefore, could be entertained in the case of Waters of his having been in a state of mental derangement, when he deprived his son of life.

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* Foderé. See Cases by Baron Hume and others.

George Waters, it is true, was proved to have been previously a man of weak intellect. Yet his capacity was sufficient to have enabled him to work like other men at the trade of a carpenter, by which he was able to earn a livelihood for himself and his family. But he became unsteady at his employment, irregular in his habits, and addicted to the immoderate use of ardent spirits. Hence another very important question arises in his case, namely, whether his deranged state of mind was entirely owing to spontaneous natural disease, or was occasioned by the use of ardent spirits operating on a peculiarly formed mind? This is a view of the case which was not pressed by the public prosecutor. But there is much reason to conclude that his occasional fits of madness were caused by *intoxication* affecting a mind predisposed to insanity. For the *delirium* always subsided in a few days; and upon the night previous to the murder he had been much intoxicated, and had even got some spirits on that same morning.

Besides the use of spirits being in many cases an exciting cause of insanity, it is no uncommon thing for some unfortunate individuals to continue in a state of insanity or delirium, for a day or two after a fit of intoxication. Of this I have seen several instances, and there are many on record.

If his immoderate indulgence in spirits was really the cause of Waters's insanity, how far should this plea have exempted him from punishment? The immoderate use of spirits causes a temporary madness in all persons, for which the law makes no allowance in cases of crime. And because in this unfortunate man, the temporary madness, or delirium, caused by intoxication was of longer duration, from bodily infirmity, than is common in other persons, should it in his case have proved a ground of exculpation? This is a case which has been frequently tried in courts of justice, and certainly gives rise to a question of some nicety. In such cases, however, if the person had previous reason—if he knew the natural weakness of his constitution, and only became deranged by getting intoxicated, his may certainly be called a voluntary madness as much as an ordinary fit of intoxication in another person; the only difference being in the duration of the fit. If, therefore, the maniac from intoxication was proved to have been of sane and sound mind previous to his libation, even although he had been of weak intellect, there seems no reason for exemption from responsibility for his actions more than in other individuals. Accordingly, the law is quite peremptory upon the subject. But certainly such cases are very proper for recommendation to royal mercy, in order to receive a remission of the full sentence of the law, which might apply to persons of perfectly sound mind.

Case II.—Robert Stirrat, about 25 years of age, was tried at Glasgow on the 28th December 1831, for the murder and robbery of his aunt Mrs M'Gibbon in October preceding.

Stirrat had always experienced the greatest kindness from his aunt, by whom he had been brought up from his boyhood, and with whom he had continued to live. Both Mrs M'Gibbon and his other relatives always considered him to be a person of weak mind. Yet she employed him as her agent in a coal trade which she carried on. Other persons also considered him so unfit for transacting business, that they declared they only paid him money, because they were desired to do so by his aunt, with whom they had dealings. But though of weak mind, he had acquired considerable proficiency in the ordinary branches of education, and religious knowledge.

About the month of August, being about two months before Mrs M'Gibbon's death, Stirrat had become very dissolute in his conduct, and absconded from her house with some of her money. On the 30th September, he returned, and was kindly received by her; but on the evening of the 2d of October, (the second day after his return,) when Mrs M'Gibbon was lying asleep on a sofa, he deprived her of life by repeated blows on the head with an axe. He then robbed her repositories of a set of silver tea-plate and other valuable articles, which he disposed of to the keeper of a public house, who had been once a jeweller, and who immediately melted them to prevent recognition.

Eight of the witnesses called for the prosecution deponed, that they had known Stirrat for some time, and had observed his conduct on different occasions, having either conversed or transacted business with him. They all considered him to be a person of weak intellect. Some of these, who were medical men, had considered him at times to have been deranged, when they had been called to see him; but they did not say whether or not it had been caused by intoxication. Others said they had seen him on different occasions to have been very easily infuriated into sudden bursts of passion. He had then a brother confined in the lunatic asylum.

When examined before a magistrate, Stirrat confessed the murder, and gave a circumstantial account of it. A letter also confessing it, and showing distinct aberration of mind, was found in his pocket addressed to his father.

While Stirrat was confined in jail before his trial, he was visited from twenty to thirty times by Dr Corkindale of Glasgow, who was at the utmost pains to try in every possible way whether or not insanity could be discovered in his case. But the result of his examinations was, that Stirrat showed no incoherence, hallucination, or insanity upon any subject. Dr Corkindale, however, considered him to be a person of weak intellect, and of slender, though not unsound, judgment. A few days before his trial, I visited him along with Dr Corkindale, and formed precisely the same opinion of him.

The only medical witness upon his trial, who considered him to have been in a state of mental derangement, when he committed the crime, was Dr Balmanno, who admitted that he judged not from any direct evidence of this, but drew it as an inference from the nature of the act itself, which he thought could only have been that of a lunatic. But certainly the cool deliberate murder, the robbery, and disposal of the stolen property, could scarcely have been effected by a madman. Mrs M'Gibbon having been asleep, Stirrat committed the murder without any provocation to excite violent passion, and there was an artful selection of the valuable articles and of the very suspicious character to whom he disposed of them, who melted and concealed them, as well as the reason he gave for having the articles in his possession,* altogether very unlike the conduct of a lunatic. Surely in all such cases some further proof of insanity than the nature of the deed itself ought to be required. This was so far unlike the deed of a really insane person, that here there was an obvious motive, whereas in murders committed by lunatics, there is generally none apparent.

Was insanity then proved at the time when the murder was committed in this case? Of this there was certainly no direct evidence; and judging from the situation of Mrs M'Gibbon,—Stirrat's conduct at the time,—his manner of accomplishing the murder, and the motive of robbery which he had in view, it could neither be considered as a deed prompted by sudden violent passion, nor the *delirium* of insanity. Neither were the contrivance and execution of the transactions indicative of imbecility of mind. On the contrary, they displayed considerable inventive and reasoning powers. And it may justly be doubted whether an *imbecile* could summon nerve and firmness enough to have carried through such a train of atrocities.

At some previous period, Stirrat had been seen in a state bordering upon insanity. But neither immediately before nor after the murder did his conduct or manner give any proofs of insanity to those who saw him, or betray any thing different from his usual state of mind and behaviour. And there is reason to conclude, as in the case of Waters, that the derangement of mind, which had appeared on some occasions previously, had been produced by the excessive use of spirits. When he returned to his aunt's house, it seems highly probable that it was expressly for the purpose of plunder, to enable him to proceed in the career of dissipation upon which he had entered. How far he had been prompted to do so by the person who received the stolen articles from him, and with whom he seemed to have been too intimate, does not appear. But the murder may have been committed, from what he considered a favourable opportunity for doing so presenting itself, in order more easily to accomplish and conceal the robbery. According to Marc, the motive of personal interest shows strongly *the moral cause* of the crime of murder in such doubtful cases.

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* That his aunt's affairs had gone wrong, and that he had taken these as his share of her property.

It must be admitted, however, that his confession of the murder before a magistrate after he was apprehended, if not counselled to do so by his legal adviser, in order to support the plea of insanity, afforded one very strong proof of insanity. But in Glasgow, I am informed, prisoners are generally attended on their examinations before magistrates by a legal adviser; so that this confession may not have been entirely from his own free will. In confirmation of this, I may state that he always appeared much displeased when the plea of insanity was spoken of to him before his trial. Stirrat was condemned upon the verdict of a majority of the jury, who considered the murder and robbery, but not the insanity, proved. Upon a strong representation to royal mercy, however, he was reprived during his Majesty's pleasure.

CASE III.—John Howison, about 45 years of age, a sturdy beggar, but formerly a hawker of small wares, was tried before the High Court of Justiciary, 31st December 1831, for the murder of Widow Geddes, near Cramond, on the 2d day of same month.

Howison, who had a very peculiar and forbidding appearance, was seen going about the hamlet, where this unfortunate old woman lived, about 11 o'clock in the forenoon of the day on which she was murdered. From several persons who saw him he received charity.

That Howison was the person who perpetrated the murder was clearly established; and, when he left the cottage where it was committed, he was seen to come out, close the door behind him, and look eastward along the line of cottages, (by which was the only exit to the road,) in order to see if any one observed him. He then ran down a bank (where there was no path) to the high road, in place of returning eastward by the cottages, and continued to run to the westward along the high road as fast as he could.

He was apprehended next day at Corstorphine, a village between two and three miles to the south from Cramond. When taken he denied all knowledge of the murder, and said he had come from Glasgow. To other persons who saw him on the same day and accused him of the murder, he replied, that nobody saw him do it, and they must prove it.

When Howison was brought into Edinburgh he was visited by Dr Spens, who also saw him several times before his trial, and had conversations with him of considerable length. In all these interviews with him Dr Spens could discover no indication of insanity, no hallucination, nor disorder of intellect. I visited him twice, and formed a similar opinion of him ; but I considered him a man of low or weak intellect, and to be possessed of a great degree of cunning. When I saw him he denied all knowledge of the murder, which circumstance I conceived at the time to be a strong proof of sanity, and of his knowledge of the heinous nature of this crime in particular, if he really was the person who had perpetrated it. He afterwards underwent several judicial examinations before the Sheriff-Substitute and Procurator-Fiscal, who stated, that his conduct when before them was composed and perfectly rational.

Dr Alison, Dr Mackintosh, and Dr Scott, as well as Dr Spens and I, heard the evidence at the trial, so far as regarded the conduct of Howison, both before and after the murder, as also regarding his state of mind for some time previously.

A woman from the Canongate, with whom Howison had lodged, had known him for a considerable length of time, for he had lodged with her six years previously. He then left her to go to England, where he had remained till within the last two months ; and on his return to Edinburgh he was so much changed in his appearance and in his circumstances, that she did not at first know him. He had formerly been a hawker of small wares, was clean in his person, and like other people ; now he was a beggar, dirty in his appearance, and peculiar in his mind. He said he had a fever in England, of which no correct account could be obtained. She detailed several peculiarities which she had observed in Howison while her lodger. The chief of these were a voracious appetite,—a practice of pricking his arms with pins or needles, to get blood from them, which he thought did good to a painful affection of his head,—he sprinkled salt on his bed to keep away " fleas,"—and when he carried salt about his person and upon his head, which he had said was to " keep away the *witches*," it is probable he had a similar object in view, which he did not choose to avow ; for he seems to have had faith in the power of salt to destroy vermin, but was never known to have given any other indication of belief in witches. Every one who had known him said that he conversed rationally, and they were convinced he knew perfectly what was right or wrong; and that they could not have believed he would have been guilty of such a crime. He was always honest in his dealings, and provided for himself.

He had at times been seen engaged in performing some of the devotional ceremonies of the Roman Catholic religion; and, for some time before his imprisonment, he had attended regularly at the Quaker Meeting-House, where he was considered deranged in his mind from his peculiar manner and behaviour. From all I heard of these, I conceived it probable that he had been engaged at times, when in the meeting of Friends, in Romish devotions and observances, for his mind seemed to have been deeply impressed with these; and he had often crossed himself, and spoken of the Virgin Mary. I was also of opinion that his conduct showed slight indications of insanity.

Neither Dr Spens nor I had, in our interviews with him, observed any proofs of insanity; and no part of his conduct immediately before or after the murder afforded any evidence either of alienation or unsoundness of mind. But Drs Mackintosh, Scott, and Alison conceived, from his previous history, that, although his conduct showed no insanity at the time of the murder or afterwards, it was *probable* he had laboured under some hallucination or mental delusion when he committed the deed.

From all these circumstances, was there sufficient evidence of the insanity of Howison, or such a degree of it as should exempt him from the penal consequences of his crime? Is it enough to exculpate a murderer, who committed the crime in the apparent possession of reason, that at a previous period he evinced some slight indications of insanity—had some eccentricities of conduct—and had some peculiarities in his religious belief and observances? The admission of such a principle would certainly neither be conformable to the principles of law, or of medicine, or to common sense.

But another important question here presents itself,—Were the previous slight signs of mental derangement sufficient to warrant the conclusion, as to the *probability* of mental aberration at the time of the murder? For, there are several cases on record of murders having been committed in sudden fits of insanity; but in these there were other proofs of it in addition to the deed itself. Besides, there can be no doubt, that such actions are apt to occur in those who have previously exhibited indications of insanity. If such a state of mind had occurred in Howison, it had been of very short duration, and was not shown to have existed by any part of his conduct either before or after the fatal deed. He had spoken rationally to persons who saw him immediately before the murder, and his conduct after it showed the greatest circumspection and prudence, as well as considerable judgment in adopting every precaution to conceal it. When to this is added, that he had never previously been in a decided state of insanity, such as either to have rendered him a dangerous person, or to have warranted his confinement—his perfectly composed and rational conduct at his examination before the sheriff—his denying all knowledge of the crime—and his never having shown any proofs of mental derangement to those medical gentlemen and others who saw him and conversed with him, surely some stronger proof of insanity was required to establish this plea. For if insanity was founded on such a principle as that of previous slight symptoms of it, the crime committed becomes the only proof of insanity at the time. But surely other evidence of insanity besides the act itself should be required; for the distinction between such a sudden and transitory fit of insanity, existing only during the execution of the deed, and a fit of furious ungovernable passion, could not be made, unless the individual had been so affected at a previous period, or was subject to one or other of these states. Accordingly, it was the unanimous opinion of the judges and jury, that Howison's insanity at the time of the murder was not established; so he was condemned to execution.

In all the cases where the plea of insanity is brought forward in exculpation of crime, if there is not evidence of decided insanity, there is at least some peculiarity in the mental constitution of the individual for whom this plea is urged,—some state of mind, rendering him unlike the generality of other men, upon which the plea is founded. The most common of these states of mind are, 1*st*, Natural imbecility, or weakness of intellect; 2*d*, Irritability of temper, or liability to sudden violent bursts of passion; 3*d*, Weakened intellect, from previous injury of the head or affection of the brain, such as by fever or stroke of the sun, by which the mental faculties have been more or less impaired; 4*th*, Eccentricities of conduct; 5*th*, Fits of derangement by the excessive use of spirits; 6*th*, Natural predisposition to insanity, and some previous symptoms of it.

These may be different in degree in different individuals,—they may vary at different times in the same individual,—and they may be variously modified without reason being either wanting or very defective,—or they may approach to idiocy and insanity. Hence the difficulty with which this subject is beset. To give a detailed account of each of these states would lead to a very wide field of inquiry, and carry me far beyond the limits and intention of the present essay. I shall therefore conclude by a few further remarks on the cases which have been presented to our more immediate consideration.

In order that insanity can constitute a valid plea of exculpation or exemption from the penal consequences of a crime, the laws of this and of other civilized countries require that it be completely and absolutely proved on the part of the prisoner. The aberration of mind must have been absolute in degree, and so complete at the time of the deed, as to have deprived the individual of a knowledge of right and wrong,—of knowing friend from foe. The law makes no allowance for a weak and crazy intellect; or for the madness of voluntary intoxication. Neither does it make any allowance for the person having been subject to occasional fits of insanity, unless there is evidence of it at the time when the crime was committed. Upon these principles alone has this plea been sustained.*

If previous insanity, weakness of mind, or individual peculiarities of temper or character, were to be admitted as sufficient evidence of insanity, principles would be established by which few great crimes would meet with punishment; the bonds of law and of society would be loosened, and crimes would multiply.

In the three cases which have just been detailed, we have three very distinct and different peculiarities of mind upon which the plea of insanity was founded. In the *first* case, that of George Waters, we have insanity at the time of the deed proved, in a man of naturally weak mind; but in a mind which was easily upset by a small quantity of ardent spirits, to which he unfortunately had become too much addicted, and which there is too much reason to think was the cause of his deranged state of mind at the time of the murder of his son. In the *second* case, that of Stirrat, we have another example of a person of weak judgment, with natural predisposition to insanity, and a mind easily excited, having taken to habits of dissipation; in whom no insanity was proved at the time of the murder, and whose motive for the commission of it was evidently to rob his benefactress in whose house he lived. In the *third*, that of Howison, we have another example of a man of weak mind, low intellect, and consummate cunning, who had at a previous period shown some indications of insanity, but who had never been considered deranged, nor exhibited any want of reason in his conduct at the time of the murder. In the first, the plea was considered sufficiently proved,—in the second it was rejected by a majority of the jury, —and in the third, it was unanimously rejected as not proven.

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* Hume on Crimes.

In considering medico-legal cases involving the question of insanity, it is necessary for the medical jurist to pay particular attention to the history and conduct of the individual supposed to be insane; but more especially to his conduct and manner immediately before, at the moment of, and immediately after, the commission of the crime, in order to ascertain whether or not any symptoms of insanity then existed. Hence conversations of medical men with the individual are not, in all cases, of importance. But such interviews should, nevertheless, take place. For in some cases madness is at once obvious; in others, the interview may tend to confirm the general character of the individual, either for weakness or peculiarity of mind.

Such interviews, however, should be very cautiously used as affording proof of *soundness* of mind. For the insanity, though complete at the time of the crime, may have gone off, as in the cases of Sir A. Kinloch, tried 1795, and Campbell, tried at Glasgow 1826,—it may be successfully concealed by the individual, or the subject of his madness may not have been touched upon during the conversations with him. Cases of this kind have occurred and are on record.* An individual may likewise show a perfect knowledge of right and wrong, as upon the subject of murder, and may nevertheless be completely blinded as to the crime committed by his own individual act, from a morbid hallucination relative to the particular case. Hence judges should keep in view, that, although medical men and others discovered no indications of insanity after several conversations with the person, nevertheless he may have been, and still may be, insane.

In many doubtful cases, therefore, a medical witness cannot answer decidedly from his own experience, if asked, whether or not the individual is insane. He can only speak to what he has himself seen of the individual, which may not have afforded any evidence of insanity. But if asked to give an opinion upon the evidence of others, he can say, upon the evidence of credible witnesses, as to the conduct of the individual, whether or not, and at what periods of his history, he showed indications of insanity; leaving the judges and jury to decide as to the validity of the plea in exculpating the prisoner from punishment. In such cases the question for the jury comes to be, was the insanity or aberration of mind at such a time, and in such a degree, as legally to exculpate him?

By a personal interview with the person alleged to be insane, though we may not discover that he is insane, we may see that he is not quite right. For, in most of these cases, there is something about the individual, which makes him unlike the generality of other people. This state is often very obvious, though it is not easily described. It struck me very forcibly at my interviews with each of the three individuals whose cases I have just described. There seemed in all of them some want of intellect. They did not seem to possess the same composure of mind common to other people. They did not show that ready and rational apprehension of subjects talked of, followed by the sensible remarks we observe in ordinary persons. They had each a low degree of intellect, and a great look of cunning. They spoke rationally, and with consideration, but not with ordinary energy or depth of reflection; consequently their judgment appeared to be weak. They had each a vacant unsettled look. The eyes of Waters and Stirrat were particularly unsettled. In Howison this was not so much the case. He seemed to have more depth of mind, but a greater want of mental activity. While the others seemed at times quick and alert, he seemed sullen, sluggish, and indolent; so that his apparent apathy at the crime he had committed was not to be wondered at. He certainly had the look of cunning and ferocity ; so much so, that in his presence other persons felt afraid. The others both expressed and seemed to feel deep regret and contrition for their deeds, which they confessed; while Howison concealed his crime to the last.

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* See cases related by Hume, Haslam, Beck, &c.

Of these three individuals, Howison only was executed for his crime; and it is so far satisfactory to know, that the gentleman who acted as his agent in conducting his defence,—the clergymen and other persons who attended him after his condemnation,—in their interviews with him, discovered no indications of insanity in his conduct. He appeared to them to have a somewhat peculiar, a malevolent, and ferocious disposition; also a very great degree of cunning, and consequently he exhibited the greatest concealment and reserve in all that he said or did. His eccentricities, which were sworn to at his trial, and upon which his plea of insanity was founded, he positively denied, as well as the murder which had been clearly proved against him.

From all that can be learnt of Howison's history, it appears evident that his mind had become not quite sound, and that at times he had shown indications of insanity. But it is also to be observed that the degree of unsoundness that had existed, and continued to exist, did not prevent him from taking care of himself; from being correct and honest in his dealings; or from appearing, to the people with whom he lodged, rational and intelligent in distinguishing between right and wrong. We cannot help arriving at the conclusion, therefore, that his case, in its most favourable aspect, was one in which the plea of *insanity* was not made out to have existed in so complete a degree, at the time of the murder, as the law requires, to exculpate him from the responsibility attached to it.

35, Dublin Street,
Edinburgh, 25th May 1832.

ART. VIII.—*Case of Secondary Hemorrhage after Amputation, in which the Femoral Artery was Tied in the upper third of the Thigh.* By JOSIAH ALLSOP, M. D. Birmingham.

CASES of severe secondary hemorrhage are occasionally met with, in which tying the main artery at a distance from the wounded part is the only means of effectually arresting the flow of blood.

Under these circumstances, an important question arises; What will be the effect of this operation on the state of the wound? In this point of view, the following case may perhaps be interesting.

7th April 1829.—Samuel Hursthouse, æt. 44, received a severe injury from the falling of a mass of stone, by which the outside of the right leg was laid open for two-thirds of the length of the *fibula;* this bone was denuded, and broken into many fragments. An alarming hemorrhage took place immediately; and, notwithstanding the application of the tourniquet by a surgeon on the spot, a considerable oozing of blood continued during the time taken up in removing him home and obtaining assistance,—a period of five hours.

He was at this time found lying in a state of insensibility, from which he was roused with difficulty, with constant twitching of the muscles; cold and exsanguineous surface; respiration slow and heavy; his pulse fluttering, and scarcely perceptible; in short, in a state of imperfect syncope.

As immediate amputation appeared to present the only chance of saving his life,—for blood of a venous hue continued to ooze freely from the wound, augmented, rather than restrained, by the tourniquet,—and as Mr Adams of Matlock, the only other surgeon present, agreed with me in opinion, I immediately amputated the thigh at its lower third,—forming the double flap.

The patient showed signs of sensibility only during the incisions, and continued in the same state throughout the evening. During the night the circulation became restored, and his appearance next morning was favourable.

In the subsequent progress of this case, the action in the stump was weak and languid; and the retraction of the muscles not taking place until long after the wound had been dressed, from the insensible state of the patient, the lower part of the inner flap formed by the flexor muscles, which are not attached to the bone near the end of the stump, became separated from the opposite side; nor could the union of this part of the flaps be obtained, although at the subsequent dressings the greatest care was taken to keep them in close apposition. The upper part of the wound, however, united by the first intention; the attachments of the exterior muscles, and of the *biceps flexor*, preventing their separation, a slight hemorrhage took place on the fourth day, and recurred profusely on the sixth; it was arrested by compressing the artery in the groin, and a firm *coagulum* was formed. After this time the state of the stump improved, better matter was formed, and granulations appeared on the surface of the exposed muscles on the lower part of the stump.

The ligatures came away on the thirteenth day; by the twentieth, cicatrization had commenced on the edges of the skin; and the cavity on the lower part of the stump was nearly filled up by granulations. On this day the roller had been applied somewhat too tightly, producing uneasiness. In the night a very profuse arterial hemorrhage occurred; it was restrained by compressing the femoral artery against the *ramus* of the *pubes*, until the arrival of Mr Adams, with whose concurrence and assistance I took up the artery where it crosses the inner edge of the *sartorius* muscle.

The hemorrhage was permanently arrested; and though the state of the wound was stationary for some days, it afterwards healed more rapidly than before. In the course of ten days from this operation, there remained uncicatrized only a spot a little larger than a shilling. The further healing of the wound was now, however, protracted several weeks by the exfoliation of a small particle of bone; the irritation of which caused swelling of the inner side of the stump to appear from time to time. This was at length relieved by an incision, and after the discharge of the particle of bone a perfect cure was obtained; the end of the bone being well covered by the parts which had united by the first intention, forming a good stump.

My reasons for preferring this operation to the more common practice of securing the artery on the face of the stump, were the probable return of the hemorrhage if the latter plan had been followed, from ulceration of the vessel, likely to be induced by the irritation and injury occasioned by seeking the vessel amongst parts recently united, in a patient whose powers of reparation had been so greatly weakened; the great difficulty of finding and securing the vessel under these circumstances; and the improbability of being able to obtain for the patient a good stump. These objections did not apply to the taking up of the vessel at a distance, and there appeared to be little reason to fear effects supposed likely to result from cutting off the supply of blood from parts so recently united, because nearly the whole of the divided surface was supplied by branches of the *arteria profunda femoris.* I should not have taken up the vessel at so great a distance from the wound, had I not been obliged to consult convenience and expedition, the operation being performed at midnight, whilst the hemorrhage was somewhat restrained by pressure on the artery below Poupart's ligament. On contrasting the results of this operation with the probable consequences of tearing open the stump, I have every reason to be well satisfied with its adoption. I had witnessed a similar practice before, which had been equally successful under far more unpromising conditions.

In the summer of 1827, a young man was brought into the Royal Infirmary of Edinburgh with a wound of the hand, the soft parts between the metacarpal bones of the thumb and *index* finger being lacerated by the bursting of a pistol. In the subsequent sloughing, hemorrhage occurred from a small artery in the bottom of the wound, which it was impossible to tie effectually. The bleeding was restrained by compresses, but recurring frequently, reduced the patient to a state of great danger. At a consultation of the surgeons of this institution, (I believe Mr Russell, Dr John Campbell, Dr Ballingall, and Dr Cullen,) it was resolved to take up the humeral artery, since tying the radial or ulnar branches would have been ineffectual, from anastomoses with the interosseous artery; and since amputation could but be the last resource, if this attempt to save the limb should prove unsuccessful, yet the probable effect of thus cutting off the supply of blood from a wound in a sloughing state was considered very hazardous.

The operation was performed by Dr John Campbell; and watching with great interest the progress of the case, I was pleased to find that the influence of thus obstructing the circulation had been overrated. The hemorrhage was effectually stopped. Neither coldness or numbness followed the operation; and the wound proceeded in the most favourable manner to a cure.

In conclusion I may observe, that the fear of bad effects from this obstruction of the circulation in such cases has been suggested principally by unfavourable results, where long-continued compression has been employed. Between the state of the circulation induced by the latter method, and the sudden interruption of the current of blood in the larger artery of a limb, there is not that analogy which at first sight may seem apparent. In the case of continued compression, the venous circulation is obstructed far more than the arterial. When the artery is tied the venous circulation is not affected, or rather is free, whilst the anastomosing branches are found in most cases to be capable of carrying on as much circulation as is necessary to the vitality of the limb, though not so much as is necessary for destructive inflammatory action.

Art. IX.—*On the Cure of Amenorrhœa by Leeches applied to the Mammæ.* By Charles Loudon, M. D. Physician to the Leamington Spa Bathing Institution.*

There are but few of the sympathies which exist between the remote parts of the body which so decidely manifest themselves as that between the *uterus* and *mammæ.* It would, therefore, be useless to point out how many physiological and pathological facts demonstrate this in practice. The father of medicine was not ignorant of this great sympathy, and availed himself of it therapeutically; for in floodings he recommends dry cupping to be practised on the breasts, with the view, no doubt, of causing a revulsion, and exciting a new action in the womb.

Reflecting on this principle, it occurred, that if an action could be induced in the capillary vessels of the *mammæ*, the womb might in other diseases be made to sympathize with these parts. Leeches seemed to be the most likely means of producing this action, and in a case of *amenorrhœa* of two years standing, two leeches were applied to the lower part of each breast for a month, repeating them on alternate days. In three weeks the *mammæ* swelled to an enormous size, giving a sensation to the patient as if they would burst. About the end of the month menstruation came on, and the young lady is now the mother of two children. Several other cases in which the leeches have been tried, have been followed with the same results, and no medicine has been used excepting an aperient to keep the bowels open.

Although this remedy is submitted to the profession as a very certain means of exciting uterine action in this disease, and is founded both on the principles of physiology and pathology, it is not held up as a specific in all cases of amenorrhœa, and is not intended to supersede, but to be combined with, the other auxiliaries in the treatment of that disease. Hence purgatives, local and general, vapour baths, hellebore, and the other remedies which experience has pointed out as useful, should not be neglected. Nor is the author of the present notice aware that this practice did not exist at some previous time in the history of medicine, although, if it did exist, on what grounds it was abandoned, it is difficult to conceive. Leeches were used in medicine long before the Christian era; mention being made of them both by Pliny and Galen.

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* By a mistake in our last number, in speaking of this gentleman, the word Cheltenham was printed instead of Leamington. We believe Dr Loudon of Leamington is the only physician of that name in this country.—Editors.

Leamington Spa, 20th April 1832.

ART. X.—*On some Diseases of the Throat which affect the Organ of Voice, particularly in Singers, Actors, Orators, and others who speak in public.* By FRANCIS BENNATI, Doctor in Medicine and Surgery of the Faculties of Vienna, Padua, and Pavia, &c. &c.

AFTER the physiological researches which had conducted me to the establishment of a precise theory of the mechanism of the human voice while singing, it was natural more minutely to examine the pathological facts which were calculated to support this theory. With this view I had made many interesting observations, when I had the honour to submit to the Academy of Sciences the Memoir in which were detailed, with their proofs and consequences, the ideas which I had formed of this mechanism, of which I had not till then found any satisfactory explanation. The subsequent report, in which my work was mentioned in terms so flattering, prompted me to pursue my investigations in a pathological point of view. Many singular cases have since occurred; and I have endeavoured to determine the most eligible treatment for certain diseases of the throat, and whether or not there are means of curing very old affections which have not yielded to the ordinary treatment. The diseases which have been chiefly the object of my attention are swellings of the tonsils; the difficulty of motion of the muscles which compose the *isthmus faucium*; and the organic prolongation of the *uvula*.

I shall not here speak of the different methods of operating. All are attended with consequences more or less serious. The experience of the most celebrated practitioners, as well as my own, have convinced me, for example, that the partial or total extirpation of the tonsils may cause a hemorrhage which it is sometimes difficult to stop; fits of coughing, fainting, spasms, and suffocation, are accidents with which this operation is sometimes accompanied. As to excision of the *uvula*, it is often attended with difficulties; for it cannot be laid hold of without occasioning more or less pain, and, even though at first secured, it is apt to escape. In short, the extirpation of the tonsils, and the excision of the *uvula*, sometimes performed on singers or actors, are operations never attended with a result completely satisfactory. In the most favourable circumstances, such an irritability remains, that the slightest change in the temperature, any exertion of voice, or singing, is sufficient to cause symptoms of *angina*, which I have often seen communicated to the *pleura* and lungs. These are consequences so general of operation, that it has been my object to supersede this measure, if possible, by treatment.

1. *Swelling of the Tonsils.*—If this disease is but accidental, occurring after a cold, and is unaccompanied by fever or obstructed respiration, which should render extirpation, or at least scarification, indispensable, it seldom happens that it does not yield in a few days to sudorifics and antiphlogistic treatment. But, on the contrary, if it be the result of a scrofulous taint, as too often happens, then the antiphlogistic treatment, as I have had occasion to observe, becomes not only useless but dangerous; whilst antiscrofulous remedies, and particularly iodine, to which I add afterwards the salt or sea bath, afford the most prompt relief.

Among the preparations of iodine which I have lately employed, mineral waters impregnated with iodine, according to the formulæ of MM. Magendie and Lugol, are those from which I have obtained the best effects. I complete the general treatment by the addition of a gargle of four grains of pure iodine to a pound of distilled water; and subsequently, by the use of an astringent gargle, composed of barley-water and sulphate of alum, which I increase gradually from a drachm to an ounce and sometimes more, making it up with an ounce of the syrup of *diacodium.*

If after this treatment some inequalities of the tonsils, more or less prominent, hinder the vocal tube from taking the form necessary for the modulation of sounds, I destroy these projections by nitrate of silver. This treatment has constantly succeeded. It has not the disadvantage of weakening or rendering irritable the parts cauterized, but, on the contrary, strengthens and favours their motion; and it is a striking fact among singers, that the voice, at first very sensibly improved in its tone by the use of gargles alone, almost always acquires two or three notes beyond its ordinary range.

2. When the muscles which compose the *isthmus faucium* move with difficulty, it is essential to examine to what cause this is

owing. If it arises from weakness of the *primæ viæ*, and particularly of the stomach, tonics, such as bitter aqueous tinctures, followed by a small dose of sulphate of quinine should be prescribed. I have found, however, in certain cases, cinchonine to be preferable. The treatment is completed by baths of salt water, or sea-bathing when the locality permits it.

If the difficulty of motion depends on atony of the nerves which are distributed with the muscles near the summit of the windpipe, that is to say, if it results from relaxation of these muscles, I have recourse at first to astringent gargles; afterwards to the insufflation of alum powder, after the method of M. Bretonneau; to revulsives, and among others to moxa; and sometimes to *douches* in the region of the neck and over the vertebral column. There are few instances where these means are employed in which they are not completely successful. The insufflation of alum powder, above all, produces the most prompt and remarkable effects; and in this manner, I have restored voice to a person who, for more than six months, could not speak but in whispers, and upon whom various methods of treatment had been tried without success.

3. It remains for me now to state my mode of remedying the organic prolongation of the *uvula*. This prolongation, besides the disagreeable sensation produced by a continual desire to swallow, affects also the modulation of sounds in the act of speaking, and still more when this act is successive, as in reading. Oratory and singing it renders impossible. The irritation which the point of the *uvula* causes at the base of the tongue, the quality of the *saliva* which is secreted, the difficulty which the *palato-staphilin* muscle encounters in contracting when the prolongation of the *uvula*, in place of being momentary, depends on an organic disposition of the muscle of which it consists, induce dryness of the *fauces*, and often such an alteration in the tone of the voice, that, if speaking is persisted in, the efforts are terminated by complete aphony.

I was not aware that the application of caustic in similar cases to reduce the *uvula* to a just proportion had been tried. It appeared to me, however, that this would be preferable to operation; and I endeavoured to find means of effecting it easily and without danger. My mode of proceeding was as follows. After having accustomed the patient to open his mouth wide, and to lower the base of the tongue, to render the *uvula* more visible, I introduced a small spoon, and made him make a strong expiration, in such a way as to make the *uvula* leap over the spoon. When it rested there, I requested the patient to keep this position for some minutes, to give me time to apply the caustic. In this way I cauterized the extremity of the *uvula*, as well as its anterior part; but the posterior portion remained inaccessible to the nitrate of silver. The process was both long and difficult; the involuntary mobility of the base of the tongue always ready to start up; and the difficulty of keeping the mouth sufficiently open, and for so long a time,—were obstacles that rendered it impossible for the hand to apply the caustic over the proper place without injuring the surrounding parts. Cauterization is so painful to the patient, and requires so much precaution on the part of the administrator, that I thought of means to attain the end more commodiously and more completely.

It appeared to me, in short, that an instrument constructed for the purpose could alone fulfil our intentions in this respect; and I was fortunate enough to complete a model which seemed to me to realize the principal conditions of its employment. This instrument, which may be called the *Staphylo-pyrophorus*, or, according to its office, *double caustic-bearer*, is, without doubt, susceptible of more improvement; but such as it is I submit it to the Academy, that it may examine it and assist me by its opinion, which I shall eagerly profit by.

The principal piece of the double caustic-bearer is a metallic cylinder, in which are contained all the parts which produce the motions of the apparatus. At one of the extremities of this cylinder is adapted, exteriorly, a kind of spoon, destined to receive the nitrate of silver to cauterize the posterior and inferior part of the *uvula*. The nitrate, placed at the bottom of this spoon, is covered and exposed at pleasure by means of a flat and thin rule, which widens at the end in the form of a spatula; this rule is projected or withdrawn by sliding into the under half of the cylinder. The spoon is fixed, but its size may be varied when necessary by fitting a larger or smaller one. The principle I had conceived to fix the *uvula* was by forceps, of which the two arms separated laterally above the spoon; but having discovered afterwards, that the forceps, far from hindering the *uvula* from moving, stimulated it to escape, and as my object was to keep it in its place and not to seize it, I accomplished this object by laterally raising the spoon, accommodating the rise to the form of the *uvula*. In the upper internal cavity of the cylinder is arranged a kind of groove, in which a rod lies armed with a second caustic-bearer, similar to a crayon. This last serves to burn the end and fore part of the *uvula*. All the parts of the instrument which touch or contain the nitrate of silver are of platinum, but they may be of pure silver. The first caustic-bearer, or the spoon, is projected when it is in a convenient position, and when the *uvula* rests upon the spoon, by compressing the rule terminated by the spatula with a backward motion. For this purpose the thumb of the right hand is passed into the ring which is attached to this rule, and drawn from before backwards, whilst the extremities of the index and middle-finger of the same hand, to keep the instrument in its place, are passed into two rings vertically opposed, and soldered exteriorly to the body of the cylinder. The second caustic bearer is moved also by means of a ring on the thumb of the left hand, but in this case the motion is from behind forwards. A screw placed towards the middle of the cylinder, and below it, serves to give more or less play to each of the parts of the instrument. By a scale traced on the side of the instrument, the quantity of nitrate in contact with the place to be cauterized is indicated.

To convey the nitrate of silver more easily over the *uvula* and tonsils, I use the ordinary tongue-depressor, or the simple and ingenious machine of M. Charrière. This instrument, besides pressing down the tongue, opens the mouth to the proper degree, and prevents the motion of the lower jaw, if necessary. To avoid the galvanic taste proceeding from the contact of the steel with the tongue, I have had the tongue-depressor made of ivory or silver.

Cauterization performed in this manner causes neither pain nor nausea, nor any inconvenience. A bitter taste alone is left in the mouth, which is easily removed by a gargle of barley and cinnamon water. The eschar generally falls off on the second day; on the fourth or fifth the application is renewed; and in this manner, at regular intervals, the process is carried on till the *uvula* is reduced to its natural size.

The contractile faculty of the palato-staphyline muscle, far from being diminished, becomes on the contrary singularly increased after cauterization. This is conceived to arise from the contact of the caustic with the uvula stimulating it to contract more than before. Hence the reason why the voice after cauterization, and chiefly among singers and public speakers, gains additional compass, and becomes more sonorous. On this subject I could state many curious facts; but the following perhaps merits the attention of the Academy. Mr D., Advocate in the *Cour Royale* of Paris, could scarcely speak for a quarter of an hour without his voice changing its tone; his throat became dry,—the saliva altered in its quality—and he was seized with a convulsive cough, and was under the necessity of constant spitting. Mr D., thus forced to renounce pleading, consulted many physicians, who all agreed that his disease was a weakness of the *fauces* and the organs of speech. Sundry methods of treatment were prescribed and followed, but without success. In these circumstances he applied to me, to learn, if it were possible, the cause of the affection, and to have it removed. I attentively examined the upper part of the vocal tube, and I soon discovered that the *uvula* had the configuration of an acuminated pyramid, as represented in the annexed drawing, and was at the same time triple its usual length, (Fig. 5.) Struck with this circumstance, I at once fixed upon this as the cause of the patient's annoyance. I proposed in consequence to remove the thinnest part of the *uvula*, and to reduce it afterwards to its natural form by the employment of caustic. Mr D., declining to submit to an operation, asked if it were not possible to arrive at the same result by the use of caustic alone. I answered, that I believed this might be attempted with success, but that the treatment must of course be tedious. I began the application of the nitrate of silver to the *uvula*, and at the end of nine applications I had the satisfaction to see that I had fully succeeded. The *uvula*, reduced in its size, had taken the form represented in Fig. 6 of the drawing; the irritation of the fauces had ceased; and the voice had lost its nasal sound, and acquired more power.

The same results I have observed in some singers. Cauterization of the *uvula* almost always produces among vocalists a very sensible augmentation of the super-laryngeal notes, and adds to their sonorous power. It has besides this advantage over excision, that it leaves no asperities, no irritability, and does not render the patient more liable to catarrh, since in place of weakening the parts it strengthens them.

I might have detailed at greater length the circumstances which have induced me to give the preference in these diseases to cauterization; but I feared to encroach upon the time of the Academy. It rather became me to lay before it the results of my observations. My instrument is now before it, and its utility can be judged of. The opinion of the Academy shall be my encouragement to new efforts.

Art. XI.—*Notes and Observations upon the Contagion of Typhous Fever, and Contagion generally.* By William Fergusson, M. D., F. R. S. E., Inspector-General of Military Hospitals.

THE following essay formed part of a paper which was read last February to the Medical Society of Windsor upon the contagions of the British isles, as connected with the then threatened impending disease,—*Cholera Morbus.* Circumstances arising out of the state of the public mind when that epidemic reached London, induced me to extract from it all that related to the new disease, and to publish it in the form of a separate pamphlet. The remainder I now offer to the medical world, *quantum valeat*, through the medium of your widely circulated

Journal,—convinced, as I truly am, that whatever may tend to throw light, or lead others into the right path of investigation for striking out the light of truth upon the mysterious agency of contagion, will, in consideration of the motive, whatever may be the success of the attempt, be received by the profession with liberality, indulgence, and candour.

These contagions,—I mean the true essential contagions, which, under a gaseous or aerial form, act of themselves independent of, and unaided by, the circumstances of climate, atmosphere, locality, quantity, and accumulation,—do not amount to more than five or six, and may all be comprehended under that class, of which it is the distinguishing characteristic, to occur only once, generally speaking, during the lifetime of an individual, with the exception always of those infections that can only be communicated by inoculation, or the actual contact of matter. I am far, however, from pretending to say that contagion is limited to so confined a range; for the whole class of *pyrexiæ*, under every shape and form in which they can be presented to us, including even those of *erysipelas* and *ophthalmia*, can be made infectious diseases * through an undue accumulation of human exhalations, and defective medical police, constituting at these times, and under these circumstances, an undoubted well-marked atmospherical contagion of locality,—but of locality alone.

From the first of this enumeration I have no hesitation to strike out *typhus* fever, and class it amongst the latter; but here, in order to bring conviction to my readers, I feel that it will be necessary to expatiate and explain at some length.

Typhus fever, a disease purely endemial, may be called the endemic of the British isles, and the same parallels of latitude on the continent of Europe. † If we could suppose it during any summer season to have become utterly extinct, it would certainly spring up again in the wet and cold weather of the first winter months, before the frost had fairly set in, and keep its hold amongst the inhabitants until warm, and, above all, dry weather, had again caused it to abate. So great is the tendency of this our soil and climate to produce it spontaneously, that any depressing cause, subversive of bodily vigour, will, in a remarkable manner, predispose the body for falling under its influence. Thus, the humid, ill-ventilated, and imperfectly heated dwellings of the poor are in such seasons its constant abode; and if to these we add the adjuncts of "cold and fatigue, and sorrow and hunger," the sad concomitants of poverty, we need not wonder when we see it devastate the hovel and the cottage. Even so trifling a cause as the continuance of wet feet,—that most noxious and depressing, because adhesive and permanent application of cold, where the circulation at the extremities must necessarily be the weakest,—has been known to induce an attack of *typhus* fever, when the moral and physical causes just enumerated could have lent little aid otherwise to the developement of the disease.

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* The first of these may even be akin to hospital gangrene in our great hospitals, or not impossibly the same disease affecting a different tissue.

† Vide Bancroft.

Typhous fever, then, is not only an endemic disease *sui generis;* but so strong is the predisposition to that form of *pyrexia*, that it is prone to become an aggravation and super-addition to other forms of fever; and all the remittent types and degrees, as well as the catarrhal and peripneumonic fevers, are apt, either when long-continued, or improperly treated under a heating regimen, to glide into it. This must be familiar to every practitioner; and I need not here dilate upon it. But besides the endemic origin which I have here explained, there appears to be another source of the typhoid poison quite independent of season, atmosphere, and locality, which gives rise to a most virulent, aggravated, and dangerous form of this fever. I mean that which arises from accumulated human effluvia in crowded ill-ventilated hospitals, prisons, ships, barracks, or other habitations.

I acknowledge it to be unphilosophical and incongruous to imagine that two fevers springing out of sources so distinct should yet so entirely resemble each other, that they have ever been treated, classed, and acknowledged for the same; nor can I afford any satisfactory explanation of this phenomenon. But the fact is certain that they do so arise; for, in the contagious ulcer, or hospital gangrene, we possess a demonstrable, tangible, and visible proof of its existence. This ulcer is precisely a local form of typhous fever,—a visible personification, if I may use the term, of the typhoid poison. It never occurs but under the most distressful crowding of sick and wounded; and it is then so highly contagious, that all other ulcers, or even abrasions of the skin, however healthy before, are speedily involved in its destructive course; and so highly does it impregnate the surrounding atmosphere with its contagion, that it is not even safe to bleed a patient in the same ward where it lies. You may look in vain for its origin under any circumstances in our hospitals, but those just enumerated as being capable of inducing typhous fever upon the sound healthy inmates; but in the wounded, where the poison finds a *nidus* and a vent, instead of affecting the constitution generally, it commits its hideous ravages upon the wounded limb. *

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* The above relates to hospital gangrene alone, and has no reference to endemic

In treating this deeply interesting subject, I strongly feel how misplaced and unworthy would be any attempt at sophistication of argument, or desire for victory, at the expence of truth; but the truth is of so much importance, that I shall proceed even at the risk of being tedious to farther illustrative evidence and argument.

That moist cold, when applied to the destitute under circumstances of moral and physical depression, is, and ever must be, the endemial source of typhous fever, causing it to spring up spontaneously in this country with each revolving season, I have already shown. Should it be doubted, I may refer to the two extremes of the tropical regions, and those on the borders of the arctic circle. In the first it is never endemic, and cannot be called into existence under any circumstances but those of the most defective medical police; and in the second, while sojourning there, I found to my surprise that it was almost equally rare; but the cause was not altogether hidden. The Russian peasant, although inhabiting the most rigorous climate of Europe, feels little of moist cold. The approach of winter is sudden, and the ground is almost immediately bound up dry in frost. His habitation is close and ill-ventilated; but he heats his stove night and day to an astonishing degree,—to that degree with which humidity is incompatible, and no contagion can exist; and every Russian and Finnish peasant, however filthy in his clothing and person, invariably takes a vapour bath at least once a week during all seasons of the year. The Esquimaux Indians,—those children of the arctic circle,—filthy even to a proverb, are said to know nothing of typhous fever. They live in their snow-built huts,—the driest of all habitations,—although heated to a high degree in the centre by a large lamp of whale oil, and know little or no disease till the advent of their short summer, when the melting of their fusible walls subjects them to pleurisies in as great a degree as the inhabitants of Europe.*

Such, then, is the endemial (and irremediable in a great degree, because endemial,) source of typhous fever amongst us. That other *fons et origo mali*, undue accumulation of human *effluvia*, ought to be remediable at all times amongst civilized

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or constitutional ulcers, which, however formidable their ravages may be, are never in themselves contagious. It may, however, reconcile my readers to the above doctrine, to state the fact that ulcers, devastating ulcers, have been seen in many parts of the world to be the substitute for endemic fever. Our army in St Domingo during the years 1796–7–8, abounded with such proofs; and in some parts of the East Indies, where I have never been, I understand that examples of it were even more rife.

* A reclaimed Esquimaux of the name of Zaccheus, who was hired to accompany the first northern expedition under Captain Parry, although cradled midst the Polar snows, could not stand the vicissitudes of an ordinary Edinburgh winter, but died of *pneumonia* in the Infirmary there during the winter 1819–20.

nations; but where the evil has been neglected or overlooked, the effect is certain. No place or climate can be exempted from the punishment. Witness the Black Hole of Calcutta, where the survivors of that horrid night underwent the ordeal of putrid fever as soon as they were released.* Witness our own jails and prisons, where, in worse times than the present, the condition of the prisoners became so terrible that it was unsafe to bring them into court for trial; and witness, too, the hospitals of our fleets and armies, when, under the difficult circumstances of warfare, wholesome accommodations for their numerous inmates became too often a matter of impossibility. But the principle even goes further, and may be found existing amongst the lower animals, which, when cooped up in the close holds of ships in unfavourable weather, become actually infected with what may be called an epizootic typhous fever.†

All this I know has been denied by other writers, more especially by Dr Bancroft, whose philosophic inquiring mind was never to be satisfied with mere words; and it must be acknowledged with some apparent reason; for the generation of the typhoid poison has been never known to come from a hurried process, and would seem to proceed from a slower concoction than the sudden crowding together of a number of people, for a single night, could furnish. It is farther well known, that typhous fever can neither be carried into tropical climates, (for even the plague stops at the tropic of Cancer,) nor take root there. Governor Holwell, then, may have ignorantly asserted in his narrative that he was taken with putrid fever after his release; but the boils and critical abscesses with which he and his surviving companions were covered, show that some morbid poison must have been imbibed into the system; for boils do not in any country come as a result from violent perspiration, which in India and other hot climates produces the eruption, (and no other,) which goes by the name of *prickly heat*. Relying upon the respectable authority and pure character of the philanthropic Howard and other writers whom he quotes, he (Bancroft) has evidently been misled, when he affirms for a fact that naturalized typhous fever does not exist in any other countries of Europe than those of the British isles, and that it only visits the former as a transient imported disease from the latter.

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* Vide Governor Holwell's narration.

† The term *typhus* fever may appear ridiculous as applied to the lower animals; but the author actually saw something very like it when a passenger on board of a transport that was employed to convey a cargo of sheep from the Island of Exuma, in the Bahamas, to Cape Nicholas Mole, St Domingo. The weather being fine when the sheep were embarked, and the run expected to be short, a very great number was put on board; but the passage turned out tedious and stormy, with closed hatches, causing a great portion of the animals to die with black tongues, putrid mouths, and the blood in the larger vessels like the thin lees of port wine. The disease could scarcely have been scurvy, for there was plenty of fresh vegetable provisions ordered on board.

The strongest negative evidence to the contrary of this has been furnished by every European army in the field during the late war, and will be furnished hereafter, so long as armies pursue the operations of war, according to the system of Napoleon, during the winter season, instead of going into winter quarters. In the colder countries of Europe this was to have been expected ; but Portugal and Spain, after their summers were past, were even more prolific of the typhoid contagion if possible than Germany and Russia. From this cause the Spanish army of the Marquis Romana, when it crossed ours in Gallicia on the retreat to Corunna, was in a state of pestilence,—a moving cloud of the disease. The Portuguese *Depositos*, as they were called, (district prisons for the conscripts,) managed by villanous native commissaries, who robbed the recruits in every way of their food, clothing, and supplies, were destroying the army from this cause far faster than it could have been recruited, until they were placed under the direction of British officers ; and the people of the country, when driven from their homes and penned within the lines of Lisbon during the winter of 1811, were cut off in thousands by the disease. To say that these were not typhous fevers would be ridiculous. They were absolute caricatures of the disease in all its features,—not to be matched, I am convinced, in the worst times of Ireland. The Spaniards could not receive the infection from the British, for with us they never amalgamated ; and their armies, remote from our line in the winter seasons, were paralyzed from the same cause as Romana's ; but we got it from them whenever obliged to follow in their course, and take up their infected cantonments. Nor did we get it, nor even take it, from the miserable population inclosed within our works near Lisbon ;—the winter diseases of the well-fed, well-lodged troops, being those of the season and field operations alone, not typhous fevers.*

I acknowledge that there may, indeed must, be a peculiar aptitude in the moist soil and climate of the British isles for the generation and nurture of the typhoid poison ; but this property of generating the typhoid principle is not exclusively peculiar to the insular soil. On the contrary, it is common to the human race whenever the circumstances here denoted can be brought into full operation and combination ; and even the high temperature and dry atmosphere of the tropics, however soon and certainly it may dissipate the principle, is not altogether proof against its generation,* which has infested, and will infest mankind, so long as they

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* I can speak to these points with the more confidence, from having held the situation at the time both of Inspector-General of Hospitals to the Portuguese army, and that of a member of the Junta that sat at Lisbon for the succour of the distressed population.

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* The following extracts from a report of my own to the Army Medical Board, dated Barbadoes, September 8, 1816, on the Childers brig of war, may probably illustrate this point; and, as they were written without reference to any ulterior object or purpose, but were simply a statement of facts, they may be reckoned on that account the more conclusive.

This vessel was in so distressed a condition from the sudden invasion of fever during a ten days' passage from Trinidad to Barbadoes, that, had she not been favoured by the winds, she could not in all probability have been navigated into port. Nearly one-half of her people had perished in that short time, and five-sixths had been taken ill. The following is the description :—" All the medicines that are commonly used in fevers had been expended several days before the ship got in, as well as the sick stores and hospital comforts of every kind, from this unlooked for accession of disease. When the sick arrived in hospital, four of them were in the last stage apparently of typhous fever. Their vomitings, such as are usual in tropical fevers, had ceased, as I understood, for days. They were in a state of low delirium, with *subsultus tendinum ;* the teeth and mouth furred, with black dry tongues. One of these patients exhibited the well known symptom of picking at the bed-clothes; and, on the whole, I had never before seen fever so markedly typhoid within the tropics. Some of those, too, who were recovering, were in that fatuous lost condition of intellect that is often seen in patients recovering from an attack of *typhus gravior*, and may be called peculiar to that form of disease. The sick medical officers were in a state little capable of giving clear accounts of the origin and progress of the disease," &c. &c.

In another part of the report upon the origin and causes of this state of things is the following: " The rains that ordinarily fell, according to report, during six hours of the day, obliged the greater part of the crew to seek shelter below, mixing with the sick, and generating from the crowd a vitiated foul atmosphere, as much to their own danger, as to the aggravation of the disease in those already ill. Such a condition of atmosphere within the ship seems in fact to have generated what many think impossible in these climates,—a hybrid compound fever of the widely differing types of the ardent and *typhus*, and to have been propagated by contagion, under circumstances of mortality and distress that rendered it impossible to preserve ventilation and discipline." In continuation, after the sick were housed in our excellent Hospitals, the report proceeds to state: " It is most gratifying to report that no sickness of any kind has been communicated to any medical attendant, or other person of whatever description employed about the sick, although the devotion of the medical officers to their duty on this interesting occasion has been unbounded. The hospital assistants have scarcely ever quitted the hospital yard since the seamen were first brought on shore; and two of these are young men recently arrived from England, for whom I had the most serious apprehension,—not that they would be exposed to contagion, which in these climates I have ever found to be impossible under circumstances of due ventilation, discipline, and accommodation,—but that fatigue, watching, and exertion, would predispose them to be attacked by the endemic yellow fever of the country. In regard to the ship, I have never ceased to insist on the necessity of her complete purification, in all respects, by the removal of every article of ballast and stores preparatory to fumigation with charcoal fires, white-washing," &c.

This was at last effected, when her hold was found to be in such a state of fermentation and impurity from foul ballast, that a candle would not burn in it, and the stoutest negroes fell down at the work.

A few years afterwards, another ship of the same class, (the Narcissus, I believe, but I forget the name,) underwent the same mortality, under exactly the same circumstances, as reported upon by Staff-Surgeon Hartle, from Antigua; and a little more than a year before the arrival of the Childers, the Regalia transport, as reported upon by myself, suffered nearly as much from having stowed on board a cargo of green wood on the coast of Africa.

In this way, then, may we account for particular ships of a fleet, and particular parts of these ships, being ravaged by fever, while all the rest are free; for at the very time the Childers thus came into harbour at Barbadoes, the Scamander frigate fail to observe the decencies of civilization, or neglect the preservatives which reason teaches, and all governments ought to enforce. Happily for the continuance of our race, this infection, so easily generated, is essentially an infection of *fomites* alone,* (allowing that the qualities of atmosphere can be so denominated,) incapable of transportation as a personal contagion, and requires the aid of its own contaminated atmosphere before it can be diffused as an epidemic disease; for it would otherwise open the widest outlet, and constitute the severest drain upon human life.†

I assume, then, for reasons which I shall now farther illustrate, that endemic typhous fever is not essentially an infectious disease; that it may be approached at all times with impunity under ordinary circumstances of ventilation and personal purity; and that where those are observed, it cannot be carried or transported by any sick, however ill, so as to affect others in a different locality. To say that it has often spread to other inhabitants of the same locality or dwelling even, if it be incapable of transportation, does not constitute a contagion.

It only amounts to a disease of locality, very frequently remittent or catarrhal fever, sublimed into *typhous* through neglect or improper treatment; and even should it infect visitors who choose to place themselves within its influence,—upon the same ground, that would be no proof of contagion, unless those visitors could also carry the infection so as to communicate it to others upon different ground at a distance; for to talk of contagion limited to one spot, is surely only saying that the spot of ground, and not the person of the patient, must be the source of the disease. ‡

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also arrived with a fatal yellow fever pervading the midshipmen's berth alone, four of these young gentlemen having died in a very short time, without affecting a single other individual except the assistant surgeon in the same berth, and a ship boy.

* The question of time in regard to the retention of infection by unpurified *fomites*, is a most important one. I think it may fairly be presumed, that the infection will adhere to saturated woollen clothing and other absorbent substances, as long as the dried matter of small-pox can retain the powers and qualities of an inoculator.

† Gratitude and respect for the author of the Essay on Yellow Fever, that splendid specimen of philosophic induction and freedom of inquiry, which dissipated at once the prejudices of a century, would make me diffident and cautious how I impugned opinions so well advocated and ably supported as his. But, *magis amica veritas;* the experience of my life has so strongly impressed me with the contrary, and I esteem the truth of so much importance to the best interests of humanity, that, averse as I am even to friendly controversy, I have not hesitated, for the sake of the object, to enter its lists with a powerful antagonist, relying upon his tolerance and candour for a reconsideration of the subject, and the indulgence of a liberal mind to those who differ from him, on the open public ground of medical inquiry and sanatory research.

‡ This point has been well and ably illustrated by Dr Elliotson of St Thomas' Hospital in his published lectures; and every attentive observer must have noted manifold instances of the same. One of these that occurred in the summer of 1830, was so remarkable as to induce me to call to it the attention of the Medical Society

In this transportability resides the very touchstone and answer to the question of contagion. To suppose that a patient, infectious in his person, can only give out disease in a particular atmosphere and place, would be like what we have all read in the early lessons of our childhood, where an individual performs a prodigious leap in the island of Rhodes, but could not possibly be made to do it anywhere else. With equal justice may we assert that our contagious *exanthemata* can only become diffusible under similar circumstances, or that the infections of *syphilis* and *scabies* are influenced by the laws of atmosphere and locality. In regard to *variola*, the chief of those *exanthemata*, we may with more reason draw the direct contrary inference; for, previously to the discovery of the vaccine preventive, it used to be during the finest weather of the season that our babes, when carried out in arms, were struck and blighted by the disease, from passing even momentarily to leeward of an infected subject. Nor is it unreasonable to believe, that the very purity of the atmosphere actually contributed to the efficacy and surety of the infection; since then the contagion would be less adulterated and dilated with moisture, or other extraneous matter. No one would so dilute the actual variolous fluid (if a fluid) before proceeding to inoculation; and the contagious vapour can be nothing else than the same material under a gaseous form.

That other form of typhous fever which I may call factitious, (as being created by ourselves out of causes over which we ought to have exerted due control,) to distinguish it from the endemic, which we cannot prevent, must also be contagious under the same circumstances. Here, however, I believe, in like manner, that the person of the patient, independent of *fomites*, never gives out at any one time a sufficiency of the typhoid poison to affect another healthy person; that the poison can only be made effective through contamination of atmosphere, under long-continued accumulation of morbific effluvia; and in fine, that the atmosphere of the patient is infectious, and not his person, which, if once cleaned and purified, and ventilation re-

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of Windsor. In one of our foulest lanes, close by the river side, a patient of the Dispensary was taken with typhous fever, so strikingly marked in all its features, character, and history, that it could not be possibly mistaken. In the small close room that he inhabited, seven others of all ages slept; and when the apartment was shut up at night, its atmosphere was literally intolerable to a visitor from the open air; yet not one of these seven took the fever,—while another case exactly similar occurred within two doors, and dropping cases of the same were dotted up and down the neighbourhood, without ever proving infectious in the same house. I account for the escape of the inmates of the first, from the disease occurring in June, then the driest season of the year, admitting the finest ventilation through the day, and permitting exit from the apartment to all at the earliest of the morning. Had this fever made its invasion in the winter season, when the same ventilation and purity must evidently have been impossible, I cannot doubt but its accumulated *fomites* would have proved violently contagious.

stored, may be approached, however ill he may be, with perfect impunity. In this belief I feel warranted, from the knowledge of several important facts, of a character so general as to warrant the greatest confidence in their application. 1*st*, The Bristol Hospital, for a great many years, has received typhous fevers into their well-disciplined wards, without having ever spread the disease even to the most contiguous beds. 2*d*, Several of the great hospitals in London have followed the same example with the same results. 3*d*, The most pestilentially dangerous fevers to approach when single, in the confined dwellings of the poor, have almost everywhere been found devoid of every infectious principle when collected together in numbers, and confined by the hundred within the walls of a well-regulated fever hospital. Upon this point the question of contagion must turn; for, if the evidence here given be not impugned, it will be impossible in human testimony to adduce anything more decisive and conclusive. Reasoning from single individual instances will generally deceive; but well-digested impartial observation upon masses of men can never lead to an erroneous conclusion. *

While I thus, however, express my conviction of typhous fever never being a true essential contagion under any type, I must allow the question to be in some degree open to discussion, in regard to that (type) form which has an animal origin, and may justly be called an animal poison. The evidence of the great hospitals just alluded to would imply a negative; but it remains to be proved whether that belief may not have been founded upon the evidence of endemic typhus only, without experience of the other form of the disease. Thanks to our improved prison-discipline, such cases must now be rare. But when they existed in former times, the Black Assizes at Oxford, the Old Bailey Sessions, and other Sessions in Ireland and elsewhere, recorded in the different medical journals, would give fearful proof of its dreadful powers. I acknowledge, too, that the infection of hospital gangrene is a transportable and inoculable contagion, as applied to other ulcers, and that puerperal fever, another local modification of typhus, may be carried from house to house in any locality. With regard to the jail fever above alluded to, however, my own belief leads me to the conclusion, that the contagion resided in the woollen clothing of the prisoners in the dock, from whence it is stated that a stream of air from an open window blew directly upon the court; and that, had they been furnished with fresh clothing, and their bodies purified before being placed there, the closest proximity or actual contact would have produced no disease whatever.

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* The author alludes here to what he witnessed, more especially at Liverpool, when on the staff of the north-west district, in the year 1804. Typhous fever had, up to that time, proved a most virulent and dangerous contagion to the medical faculty visiting the poor in the lower part of the town, who lived for the most part in cellars or other wretched dwellings: but on the building of an excellent Fever Hospital, its character there as a contagious disease altogether ceased.

This belief I ground on the fact, that woollen covering of any kind is as open and as prone to absorb, as it is tenacious to hold in accumulation, every species of animal exhalation; and the records of our press-gangs and prisons will show, that men would, in those days, be introduced into our fleet and armies, who for months together had never once had their clothing changed by night or by day; and this leads to another consideration of mighty import in the history and consideration of disease; for it would seem that these men had not themselves at the time the dreadful distemper, which they communicated with such fatal effect to the Court that tried them. That they had it not at the time I can fully credit; but that they were about to fall into it, and that, too, under its worst form, may be fairly presumed.

This proposition is not paradoxical; for it has been verified, and may be seen every autumn in all the aguish districts of our own country, that the actual inhabitant of the swamp itself, immersed night and day in a sea of malaria, is never so liable to fall under its influence as his neighbour on the dry rocky brow of the hill immediately above the marsh; thereby proving that the continuous application of a morbific power from without so deadens the nervous energy, that it becomes incapable of assuming the reaction and resistance which would be necessary to throw it off, under the form which nature has decreed of acute disease. The release from the deeply infected cells of a prison to the pure open air,* would seem to restore this power to the

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* It is familiarly known that the inhabitants of the malarious districts of Lincolnshire, who never had the ague there, are certainly struck with it on removing to Yorkshire, another healthy hilly country.

In my inspection report of the Island of Trinidad, dated March 1816, I find the West India rangers,—a corps composed of deserters and military criminals,—described "as generally labouring under cachectic hydropic debility, like the advanced stages of *mal d'estomac* (dirt-eating) of negroes, or chlorosis in women, without distinct type of disease, and consequently, without light to understand the case, or guide to apply a remedy. This form of illness, which, in the worst and most incurable cases, appears without preceding fever, as an original primary disease, sapping the powers of life and animal energies through some silent inexpressible operation, is so common to the marshy unwholesome districts of Trinidad, at some distance from the sea coast, that it has been called by the military the Trinidad disease. I believe it proceeds from the action of the latent marsh poison on the constitutions of those who have become so debilitated by long exposure to its malignant blighting influences, as to be incapable of assuming the forms of regular fever, or the powers and chances of throwing it off, by the channel which nature has decreed, of acute disease.

"The European medical officer, if he has been conversant with intermittent fevers and their *sequelæ* in colder latitudes, would, in viewing the ranks of a Trinidad corps, pronounce them to be generally afflicted with *splenitis* in its different stages, many of them in its last, so remarkable is the tallowy bloated appearance of the prisoner, in the same way that the inhabitant of the hill, in a swampy country, from breathing alternately the wholesome air of Heaven, with the noxious vapours from below, always retains it, and leads the superficial observer to the fallacious conclusion of dry rocky ground being more pestiferous than the bed of the fen itself. But how different is the true state of the case. The dweller in the locality below may, it is true, exhibit no acute disease; but every organ is disordered;—he has no health in any way, and is certainly destined to an early grave; while the other, although he may have imbibed the poison in its fullest dose, still possesses the power to throw it off, by an effort of his constitution, however dangerous and painful. He may, through such an ordeal, be restored to pristine health and vigour. With his benumbed neighbour, unless he removes from the marsh, it is impossible. He has been struck to the vitals, and must succumb to his fate. This is not imaginary, nor am I speaking of what I have not seen and examined. In many of the malarious districts of Spain, old age, among the resident inhabitants, was unknown. On the marshy banks of the great Guiana rivers, and in the central districts of Trinidad, presenting as concentrated a body of swamp as any in the world, our soldiers died by hundreds, blighted and withered, without ever showing a paroxysm of fever; and it is even recorded by Dr Gregory of Edinburgh, in his lectures, that in a most unwholesome locality of the Southern United States of America, of which, at the distance of 40 years, I now forget the name, no native inhabitant constantly residing, ever attained the age of 21 years. I have been

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countenance, the lividity of the lips, and pearly whiteness of the eye; and it is with surprise he finds on dissection that the abdominal viscera are seldom more than secondarily affected, that the thorax is the principal seat of disease, where the heart is found to be enlarged, pale, flaccid, inelastic, covered with fat, and swimming in a pericardium filled with dropsical effusion. Under these circumstances, where the ill prepared arterial blood, deprived of its red particles, can communicate neither density nor energy to the muscular fibre, though the miserable sufferers may often live a long time, they are unfit, even in the early stages of their illness, to make any active exertion, The first time I saw the West India rangers march in quick time round the garrison parade of Barbadoes, where they had been called, after a long residence in Trinidad, to accompany the expedition against Guadaloupe, they staggered, dropt, and fell by dozens out of the ranks, like men under a murderous fire of musketry. Fifty of them were on the ground before they had made a single round, (little more than a mile,) whose quivering lips, and ghastly looks, and hurried breathing, presented a striking image of the mortally wounded." An inspection was immediately ordered, and a large proportion of the men was left behind; but the remainder, when they came to land in Guadaloupe, were found to be quite unfit, as a corps, for their own light service of the woods and mountains, so generally were they affected in the manner just described. My friend Dr M'Cabe, now of Cheltenham, then surgeon of the York rangers at St Joseph's, upon the great eastern marsh Trinidad, who was most indefatigable in his researches and dissections, I consider to be better qualified, from the opportunities he then enjoyed, than any other observer, to give useful information upon this mysterious manifestation of the marsh poison.

led into this digression from my desire to prove the possibility of the most intense existence of a cause, without a visible symbol of effect, as in the case of the prisoners of the Old Bailey, and the inhabitants of a deeply malarious county.

It has been said that typhoid contagious fevers never prevail even in the most crowded slave ships; and I believe the statement, because the heat to which the inmates are subjected in these climates is unfavourable to the generation of contagion, or rather is sure to dissipate it, even under the most limited ventilation; and the poor creatures, being in a state of utter nakedness, are saved thereby from the accumulation of the infectious principle, to the communicable degree under the form of *fomites*. The exemption of the Greenlanders, the Esquimaux, and the Kamschadales, if true, is not so easily explained; for though the dry cold of the arctic winter may be incompatible with the developement of the contagious principle, it ought to be unloosened and spring into activity with the melting of the snows, and the first moisture of their short-lived summer weather. There may, however, be circumstances in the savage life and idiosyncracy of the natives unfavourable to the existence of typhous fever, which a better acquaintance with their habits may hereafter elucidate. At present it is an anomaly, which might be explained on the assumption that the infection had never been introduced amongst them; but even this, were it true, could never account for its non-generation, under circumstances more favourable to the first explosion of the disease than ever occur amongst civilized nations, supplied with the means, and endued with the knowledge to preserve themselves.

A better explanation than this would seem to offer itself in the absence of the depressing passions—those powerful emasculators of human energy—which are unknown in the savage life, or at least are never felt after the grosser animal wants have been supplied. All that is comprehended under the French word MORALE has amongst them no existence; nor can its all prevading influence be called into action so far as to affect their bodily health. Few, I believe, have ever seen an insane negro, even under the most cruel slavery, and fewer still an insane Indian in his native woods. With idiopathic fever, then, they may be said to have little or nothing to do, which, as distinguished from the sympathetic fever of wounds and inflammation, is unknown amongst the lower animals, and would appear to be a characteristic contingency of our more perfect organization—nay, more, to be a product of civilization—of those superior attributes and functions of the brain, with which the lower animals have not been gifted, and which man, when little removed above that state, never exercises. *

There is still another principle bearing resemblance to contagion, and affecting the health of masses or bodies of men, of which, as it acts upon the fluctuating bases of moral and mental agencies, it is difficult to give any intelligible account. The health of a ship's company, for instance, or a corps of troops, when the *morale* is good, the discipline strict but kind, and the confidence of the men assured, will often be found firm in the midst of endemic and epidemic diseases; and plague and pestilence seem to pass them harmless until the introduction of unseasoned † recruits, even though healthy at the time,—a change of system, or some other cause, makes a break in the general health; and then will the whole rush into disease with a proclivity of current fully as remarkable as the preceding immunity. It would be ridiculous to say that this can be similar to what we often witness in *Chorea Sancti Viti*, or the imitative hysteria of girls, or the familiar acts of yawning, stuttering, &c. Yet it may be akin in a certain sense; since all our sympathies are contagious, as the word itself implies; and when the protecting shield has been removed, these seize the reins, and guide the man without restraint. So fully, indeed, do they possess him, that when his mind is impressed with the dread of impending pestilence, his ordinary disease, it is well known, will be suspended, and when it actually arrives, will be merged into the vortex of the new epidemic. Farther than this, the ascertained laws of incubation will so far be set at nought, that a terrified patient will not only fix the precise moment of infection, but will actually sicken prematurely with small-pox, (a latent infection must of course have been previously received,) through the spectacle of the disease in the person of another, or through the disgust (and nothing worse) of an excremental smell, strongly affecting his alarmed imagination; or through the same impression he may fall down the victim of an impossible contagion, like that of yellow fever. In the face of the obvious fact, that children who have no imaginary fears, nevertheless partake largely in every spreading sickness, I would advance nothing so absurd as, that mental impressions are contagious, or can produce specific diseases. But in those general affections, such as idiopothec fevers, where the brain and nervous system, instead of being the agents, are so often the subjects of the proximate cause, I cannot doubt that they eminently predispose to the explosion, and influence the current of every epidemic.

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* At a meeting of the Academy of Medicine on the decline of *cholera morbus* in Paris, the celebrated Esquirol reported the fact, of the lunatic patients of the Charenton having been altogether exempted from the epidemic, and further, that it had not been communicated, in a single instance, to any patient of the other lunatic receptacles of that capital. Vide, London Medical and Surgical Journal, May 19th.

† The venerable Sir Gilbert Blane has noted and well illustrated this fact many years ago, in his excellent work upon the diseases of seamen.

Before dismissing this part of the subject, a most important consideration still demands our attention, and that is, whether any species of aërial invisible contagion can be given out, and communicated to the living after the death of the patient. My own belief, for which I have already stated reasons in a published paper, is, that it must be impossible. I am aware that various writers worthy of the highest credit, have attributed this property of contagion after death, to a disease I have never seen,—the plague; and I know well that the infection which resides in the grosser demonstrable matter of small-pox may be carried after death beyond the parent body round the world, without losing its original powers,—that for as long as it remains a depot and *fomes* upon the surface of a corpse, it may be sublimed from it, and infect others either through means of a current of air, or through the heat of atmospheric temperature, or through the heat generated in the process of putrefaction; and I have little doubt of the same being an inherent quality of other exanthematous diseases, that were contagious before death, provided there be left any evaporable deposition or crust upon the skin. But in regard to plague, I would feel disposed to deny it altogether, unless upon the ground that matter had been formed on its characteristic plague spots, as they are called, or critical abscesses near the surface; and then I would acknowledge that their contents might be sublimed from the same causes, and by the same means as from the pustules of small-pox, the matter of which is encased in its own porous capsules, fully formed and complete as a material, is preserved in the most fitting state possible, for being diffused around, whenever acted upon by any of the above mentioned agencies. This cannot be the case in regard to the gaseous aërial contagions, where no material is discoverable, and where the very small portion that can possibly be condensed upon the corpse after death, must be so insignificant when compared with the supply that was constantly furnished by the living elaboration, as to make it almost impossible that it could constitute a focus of infection.* I shall now conclude with offering some observations upon the contagion of typhous fever and contagion generally.

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* Were it allowable to laugh on such a subject, the temptation would be found in the late regulations for the burial of the dead, during the recent visitation of epidemic cholera. In the north they were hurried to their unhallowed grave before the vital heat was extinguished, and, in some instances it is reported, before the breath was out of the body; but in London the Irish labourers beat off the police, and waked the corpse on successive nights with pipes and whisky. I confess, that, in as far as my own personal safety was concerned, (supposing it to have been an infectious disease,) I should greatly have preferred joining the latter party; for the

Could we establish the point, that this febrile contagion, unlike the poisonous leaven of the variolous fluid, or the venomous fluid of the viper's tooth, which on the reception of a particle contaminates the whole mass, is an infection of accumulation and quantity alone, we shall have attained a degree of security of nearly equal importance to mankind as the discovery of inoculation or the vaccine preventive itself. If such a result is obtained, then, instead of man constantly generating a poison which would eventually be fatal to his race, the typhoid virus, without any great stretch of fancy, may almost be taken for the monitor of his life, and preserver of his existence in its due integrity; because that accumulation and quantity, to the degree that can constitute a contagion, being incompatible with the wholesome decencies of life, ought to find no toleration in civilized communities, and may always be obviated by the simplest precautions of domestic police. When these are neglected the powers of mind and body bestowed by the Creator languish, and are deteriorated, like unhealthy plants deprived of their nourishment in a deficient soil, or of the air and light necessary to their well being; for it has been wisely ordained, that man shall use his faculties to uphold and improve the station that has been assigned to him; and the behests of Providence can never be despised without incurring the appropriate penalty in the diseases that afflict him, and the various plagues that beset his life. It will be vain for him, and his rulers more especially, to plead contagion as a predicament from which they could not escape; for that very contagion is part of their fault, being nine times in ten the work of their own creation, through default of humanity, and in consequence of their crimes. Wherever good government prevails, the worst contagion that ever appalled an hospital may be dissipated by the simple separation of the inmates; and the most saturated

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waking, I understand, never begins till the corpse is cold, and, in the recently dead from cholera, the heat is said not only to linger in, but actually to return to the body after death, (*vide* Lancet,) causing infection to rise from it (if any ever existed) at the very time chosen for the ceremony of inhumation. Like the suicide and the worst of criminals, the dead were everywhere debarred the rights of sepulture in consecrated ground, to become, as invariably happened, the immediate booty of the body snatcher and the dissecting-rooms; and this cruel outrage upon the feelings of the dying, and grosser violation of the rights of the living, was, if not encouraged, too seldom opposed, as it ought to have been, by the medical profession. In politics, it has often been reckoned good to frighten the people; and despotic power has ever found its best ally in superstitious fear. But medical science ought to spurn the base connection, and should never have been seen in the ranks of time-serving panic and superstition. To have aided in such a delusion can admit of no excuse; for its abettors, before they consented, must have forgotten, if they did not wilfully shut their eyes on the evidence of every dissecting-room in Europe, which have never become receptacles of contagion, with the exception of, I believe, the small-pox, nor have their purveyors, the resurrection men, ever fallen the victims of their nefarious trade.

lazar that ever came out of a pest house may be disinfected by the burning of a basket of charcoal, putting to flight at once by this simple process the ill-omened hosts of quarantine throughout every nation, with all their vexatious machinery of imprisonment, fumigation, and delay. Too long has contagion been resorted to as the word of refuge and of fear, which, by the word alone, constantly making its own work, has slain its thousands, while it has served to hide our ignorance of what we cannot know—to clothe the medical professor with undue influence over his patient—and to exhibit himself in the unmerited character of a preserver endued with courage to confront, and skill to disarm, the unseen destroyer. Even before he can possibly have become habituated to the presumed *infectious* influences of a new epidemic by the necessity of exposure, he walks harmless amidst the pestilence, as if a miracle had been wrought in his favour; for without such a miracle he could not be saved, and never, in fact, is saved when true infection exists; the first and surest proof of its presence every where being the seizure in its worst form of the medical attendants, (in some visitations of the true plague they have actually been extirpated,) and wherever they escape in any thing like proportionate numbers to the rest of the community, the people need have no fear of contagion. *

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* Besides, this argument of habituation cuts both ways, for many escape on first exposure and short visits to the sick, who are certainly infected by repeated and longer continued ones. Thus, on the disastrous retreat of the British army through Holland in the winter of 1794, few indeed of the medical staff escaped the typhoid contagion in our then most miserably conducted hospitals, before the retreat was finished; and subsequently, under a better organization on the retreat from Talavera to the confines of Portugal, when the hospitals became inevitably crowded to overflowing, it was seen that the best seasoned of the medical staff were the principal sufferers.

Thus, during the late visitation of epidemic cholera at St Petersburg, when, during the first weeks of its prevalence, 25 out of 224 medical men there were taken with the disease,—the British mission sent out by our government could not, in the first instance, while this was going on, justly come to any other conclusion than that it was a contagious pestilence, and, had the result been the same, or any thing like the same, in other places, the fact of its being a contagion could not have been doubted by any candid unprejudiced observer. It has, however, been so decidedly negatived at Moscow, Warsaw, Sunderland, London, and indeed everywhere else, as to show that the occurrence in the Russian capital must either have been a matter of pure chance, or, what is far more likely, the effect of prepossession in an ultra-contagion creed, strongly predisposing its disciples to be affected with an epidemic disease in the same way as the British troops in Cadiz, when, terrified by their own surgeons preaching contagion, became the victims of yellow fever, or resisted it, when assured and made confident under a better and truer belief. The assertion then so often made by the most influential writers, that a single case of disease making its appearance after an undoubted communication with another labouring under the same, must establish the truth and fact of contagion so clearly as to render of no avail all that the anti-contagionists can advance to the contrary, is surely unworthy of men habituated to any thing like exactness of reasoning. Take, for instance, the diseases of a malarious district, such as endemic fevers, or those of the camp, such as dysentery, or the ordinary non-contagious epidemics of any populous country, there must of necessity be every kind and degree of communication that can be imagined, and

The ancients * knew not what it was, and it may fairly be questioned, whether greater misery and danger has not been inflicted upon mankind through the superstitious dread of the imaginary evil, than security derived against the true contagions, from our improved, but still imperfect, knowledge. That knowledge, when perverted, has been found capable of most pernicious application in almost every country, and when obscured by panic, has led to the wildest inroads upon the peace and welfare of society.

The most simple diseases, and the most innocuous in respect to the community, have been proclaimed for contagious by the best physicians of the last century; and little more than thirty years ago, my own preceptor at St Thomas's Hospital, Dr George Fordyce, the most enlightened philosophic physician of his age, taught that ague was an infectious disease. Many still believe in the infection of *phthisis pulmonalis*, and propagate that belief to the no small terror and disquiet of those families, where unhappily that deadly taint is hereditary. There are even countries of Europe where the victims of this disease, so often the young and the lovely, while standing on the brink of an untimely grave, instead of being cherished in the bosom of their families, are shut out from human intercourse, and debarred the solace of society, through terror of its contagious nature. So firmly rooted is this belief, that even after death the habitation where the ill-used victim has dwelt is declared unapproachable till it has been exorcised, as if it had been the abode of a demon—the bedding and clothes of the deceased committed to the flames,—and the walls expurgated. No native physician dares to question the propriety of these measures. It is an article of the medical creed, taught in the authorized schools, sanctioned by the church, and confirmed by the people; and the heretic practitioner who might dare to question its truth, would meet about the same degree of toleration as if he had questioned the dogmata of the true Catholic faith.

In regard to *phthisis pulmonalis* in this country, I may at least say, that those, who act the part of the Spanish and Italian physician here, cannot have given the subject any thing like

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yet with as many undeniable instances of it as can be desired, who would now venture to say that all these maladies are propagated by contagion. I am aware that not very long ago contagion was taken for granted in almost every disease by the wisest and most learned of the faculty; but subsequent experience has opened the eyes of all impartial observers to better views of the case. It was then the creed of the times, and through the remains of that creed, and in default of experience, it is to be feared that society will still be subjected to groundless alarm on the appearance of every new epidemic.

* I speak here only of the ancient physicians, from Hippocrates to Celsus; for I cannot acknowledge the authority of the poets, nor even that of the historians, if unsupported by the physicians in a medical paper.

due consideration; for unprejudiced reflection would surely show them that the presence of the contagious principle, even in a limited degree, would, in this country at least, seriously affect the continuance of the human race. Let us suppose that the disease were now for the first time introduced into the British isles. Its course, however deadly in the end, unlike that of a transient acute disease, is slow and gradual, enduring for months, even for years, during which lengthened period its victims, deeply affected, continue until the last stages to frequent the haunts of society, to form part of our public meetings in churches and other assemblies. We inspire their breath, and touch their bodies. Under these circumstances, a single patient would spread the infection through a whole community—the community a district, and a district the entire kingdom, so that in a few years the British nation generally, and through them the rest of the world, would certainly be infected with an incurable fatal disease. To assume that predisposition is contagion cannot surely be warranted by any stretch of reasoning; nor in the cases where the surviving members of a consumptive family succumb in succession under the connate vitiation, because exhausted by watching, and overpowered by terror and grief,—will it do to say, while all the other attendants so uniformly escape, that they must have been infected from the proximity of their dying relative. *

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* Contagion has ever been the modern medical creed; and the announcement of a new one, as we have lately seen in the instance of *cholera morbus*, instead of being received with becoming distrust, and strictly scrutinized, has been hailed with so little question as to make it dangerous for any one to express doubt on the subject. It is not many years ago, that a contagious *ophthalmia imported* from Egypt was then triumphantly announced. It was in vain to represent that this new disease did not break out until several years after our communication with Egypt had ceased, where it was an endemic disease, and had never been suspected to possess any contagious quality; that in England it was altogether limited to marching regiments of the line; that it did not affect militia regiments in the same barracks, nor the officers, nor the inhabitants of the same place when in quarters; and moreover, had it been contagious, that there could scarcely have been an eye left amongst the medical staff of the ophthalmic regiments and hospitals, who were constantly employed in the closest and most intense examination of their patients, and who, knowing besides that there was only one infectious *ophthalmia*, the gonorrhœal, inserted the discharge into their own eyes with impunity, and published the result of the experiment. The disease, nevertheless, kept its ground, under the title of the *ophthalmia* pestilence; its course was traced, its laws defined, and powers described, until the detection of a deeply organized *ophthalmia* conspiracy amongst the soldiers, assisted by a wise distribution of pensions, and amelioration of the mistaken discipline which then prevailed, put this Egyptian disease to flight; and it has been no more heard of as a spreading contagion, any where I believe, except in our schools of public instruction; for it is there that the minds of our youthful students are imbued with prejudices which stick to them through life, and impede their future progress at every step in the investigation of truth. Who would believe that the contagion of dysentery was in these schools still impressed upon them as an axiom not admitting of dispute, when the whole British army have for upwards of 30 years, in innumerable reports from every part of the world, been testifying to the direct contrary, and the veriest medical tyro, who

In this paper I trust that I can have been actuated by no motive but the investigation of truth, and when I have adduced facts, evidence, and reason in aid of that cause, I look for support and acquiescence. Should the evidence turn out groundless, and the reasonings weak and sophistical, then shall I hold myself bound to retract. My aim has been to combat prejudice, however consecrated by antiquity, or upheld by the authority of the learned; and, above all, to advocate the important truths that contagion, instead of being an all-pervading principle, is, generally speaking, a rare and factitious one; that the prevailing belief in its ubiquity is superstitious and antisocial, discreditable to medical science, because inconsistent with the fact; and that, whenever it really exists, the best security against its diffusion will be found in the well-being of the people, as well as the certainty of its speedy eradication wherever it has been introduced. *

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ever served a campaign, or ever attended an autumnal emcampment, on any of the downs of England, could prove from his own patients that there was no contagion belonging to it? Would any one believe that the people of England could be made to tremble with fear for the invasion of tropical yellow fever, when in the countries where it rages, there is not even a woman, a drummer of the army, who would not laugh the learned Doctor to scorn, were he to preach to them such an absurdity as contagion; the constant daily experience of their lives having satisfied them that the disease never is, nor can be, communicated from the sick to the healthy. The instilling such opinions from authority into the minds of the young, in the face of counter-evidence the most continuous, consistent, and irrefragable, because coming from the seat and theatre of the disease, is a public injury, for which learning, however great, if without experience, and intentions, however pure, if blind to and repulsive of the experience of others, can never make amends.

* In this paper the words contagion and infection have been used as precisely synonymous terms. I cannot help knowing that they ought to bear a different import, but the significations given to them through conventional usage have been so various, that, to avoid misunderstanding, I have adopted them for the same.

It may be proper to remark, in reference to the statement contained in the footnote of p. 83, that the total number of physicians in St Petersburg during the epidemic cholera was *two hundred and sixty-four*, and of these above *forty* were attacked by the disease, and *nineteen* were cut off by it. This, which gives a proportion of rather less than *one-sixth*, but more than *one-seventh* attacked, and about *one-fourteenth* destroyed, does not, nevertheless, if all the collateral circumstances be considered, so much corroborate the idea of a contagious principle as might be imagined. All these medical attendants were in the same degree exposed to the general causes of the disease as other members of the community; and when the locality of St Petersburg, the habits of the Russian inhabitants, and the annual recurrence of their endemial *diarrhœa* are considered, it is not at all wonderful that a greater proportion of physicians should have been attacked than in other cities in which these causes did not exist or prevail to the same extent. The manifold instances of the exquisite form of the disease which we have learnt took place in the Russian capital, and in which no connection with any infected person could be traced, show that the spontaneous or atmospherical origin of the disease is sufficient to account for the numbers of physicians attacked during the epidemic, or at least that the influence of contagion was not by any means a prominent feature of the epidemic. It must be further remarked, that its occurrence in many instances in the higher ranks, instead of being favourable, is rather hostile to the idea of contagion; since in these instances no communication could be traced, and no way of accounting for such attacks is left, unless imputing them to atmospherical or similar causes of very general operation.—C.

PART II.

CRITICAL ANALYSIS.

Art. I.—1. *History and Medical Treatment of Cholera, as it appeared in Sunderland in* 1831. *Illustrated by numerous Cases and Dissections.* By W. Haslewood, M. D., and W. Mordey, Surgeon, in charge of the Cholera Hospital in that town. London, 1832. 8vo. Pp. 151.

2. *Hyperanthraxis, or the Cholera in Sunderland.* By W. Reid Clanny, M. D., F. R. S. E., M. R. I. A., &c. London, 1832. 8vo. Pp. 149.

Sunderland, it is well known, was the first place in the British islands in which the malignant cholera appeared in an epidemic form; and though the two works now mentioned are by no means the only ones, we select them for notice on the present occasion as giving at once the fullest, and, on the whole, the most fair account of the character of the disorder, and of those circumstances which tend to elucidate its nature. Their merit, we must at the same time say, lies in very different ways. That of Dr Reid Clanny is more confined to the consideration of the pathological and intimate nature of the disease, and partakes, perhaps, too much of the speculative character, which such inquiries are liable to assume. It contains, however, many ingenious views, of which that of the undue predominance of carbon in the blood occupies a conspicuous place. The performance of Dr Haslewood and Mr Mordey is of a more practical character. It gives a history of the usual phenomena of the disease; contains a considerable number of cases and dissections; and furnishes various important facts illustrating the progressive propagation of the disease. Without advancing any opinion very decidedly, the authors have adduced a great number of facts, and considered their respective weight in proving the one or the other opinion of the contagious or non-contagious character of the disease. In the whole of this inquiry much moderation and impartiality are displayed; and between the actual facts which it contains, and the candid manner in which they are applied, the work of Dr Haslewood and Mr Mordey may justly be pronounced to be the best hitherto before the public. On the present occasion, we shall endeavour, in giving an account of both works, to embody as much of each as will convey some idea of the nature of the disease as it occurred in the town of Sunderland.

Under the name of Sunderland are included the town of Sunderland proper and Bishop Wearmouth, situate on the right bank,—and Monk Wearmouth on the left, or northern bank of the Wear. The first of these places consists chiefly of two long streets, High Street and Low Street,—the latter following the course of the river, abounding in building-yards, anchorsmith's shops, breweries, &c. and communicating with the High Street by numerous lanes, inhabited chiefly by the poor and working classes. The large proportion of the population, consisting of sailors, keelmen, casters, &c., however, is situate chiefly on the south of the High Street, in streets at right angles. At the east end, which is terminated by the barracks, are several small streets or lanes, badly arranged, imperfectly ventilated, and not well cleansed; such as the Fish Landing, Long Bank, Silver Street, Burleigh Street, Sailor's Alley, Love Lane, Wood Street, Warren Street, &c.; and in this locality the disease chiefly lingered. At Sunderland proper the banks of the Wear are low, sloping, and flat; but at Bishop Wearmouth they rise into considerable and rather steep elevations, so that while the east part of Sunderland is low, level, and little raised above the river, on the west, towards Bishop Wearmouth, the ground rises gradually to such an extent that the difference between the lower part of Sunderland High Street and Bishop Wearmouth church-yard is estimated to be about 96 feet; and the difference between the level of Sunderland church-yard and Bishop Wearmouth is estimated at 73 feet. The houses in Sunderland proper, inhabited by the inferior ranks, are in several streets large, and provided with roomy apartments. These houses, indeed, which are now inhabited by the poorer classes, were formerly occupied by the wealthy inhabitants; and the individual abodes in which one family was accommodated, now serves to contain several.

The inferior streets or lanes of Sunderland were already stated to be narrow and imperfectly ventilated; but these natural causes of insalubrity are somewhat augmented by the practice of accumulating large masses of ashes and every species of filth, for the purpose of afterwards disposing of it profitably as manure. This practice of keeping private dunghills is stated to be so general, that in some streets of unusual length they amount to from 10 to 20.

The west end of the High Street of Sunderland terminates in Bishop Wearmouth,—a division of the town consisting of large commodious well-built houses, arranged in spacious well-aired streets, and occupied chiefly by the opulent citizens. Monk Wearmouth is an irregular town or suburb situate on the north bank of the river, connected to Bishop Wearmouth by the celebrated cast-iron Sunderland Bridge, and communicating with Sunderland by means of a ferry.

The population is stated, according to the constituent parts of the town, in the following manner:—

Sunderland Proper.	Males.	Females.	Total.
Seamen,	1849		
Militia,	7		
Others,	7179		
	9035	9881	18916
Bishop Wearmouth,	6328	8134	14462
Bishop Wearmouth Pans,	163	200	363
Monk Wearmouth,	688	810	1498
Monk Wearmouth Shore,	2649	3402	6051
			41290

This population is said to increase gradually at the rate of 500 souls *per annum.* In 1828, it was only 35000 ; and three years and a-half have elapsed, during which it has increased almost 5000 persons, that is, more than 1000 *per annum.*

The staple commerce of Sunderland is the coal trade, from the coal mines along the banks of the Wear, and in various parts of the county of Durham ; in this almost every inhabitant of the place is more or less closely concerned ; and upon this all the other arts and trades carried on in the place depend. It is calculated that 1,000,000 imperial chaldrons of coal are annually exported for London and other places ; and for this trade a fleet of 696 ships is requisite, varying in tonnage from 200 to 350 or 400 tons. It hence results that ship-building, boat-building, carpentry of all kinds, anchor-casting, nail-making, rope-making, sail-making, and every species of trade required for the purposes of navigation, flourishes with unusual vigour. The abundance and cheapness of fuel has also given birth to a good deal of glass manufacture ; but this occupies a small proportion compared with the others now specified.

The mariners of Sunderland, amounting at present to 5266, have been long celebrated for their seamanship, their resolution, their courage, and their endurance; and the dependence of the British navy on this nursery for supplies of seamen is no exaggeration. Intrepidity approaching to recklessness at sea, industry in the pursuit of their calling, and extreme aptitude for, and dexterity in seamanship, are the prominent characters of this class. A seaman of this kind on board a collier, which makes on an average ten voyages to London in twelve months, with wages at the average rate of L. 3 per month, earns about L. 30 per annum, exclusive of his provisions. The *keels* or vessels which convey the coals from the upper part of the river to the wharves and vessels in the port are manned by an amphibious race, half-landmen half-boatmen, whose constitutions are in general robust, unless when broken by the abuse of liquor and incessant exposure to hard labour in all weathers. Lastly, a third class of labourers connected with the coal trade of Sunderland are the *casters*, or a species of heavers, who throw the coals into the port-holes of the vessels. This class is proportionally less numerous than the sailors and keelmen, in consequence of the employment of a species of balanced crane, by which a whole waggon of coals is in a single minute precipitated into the hold of the vessels from the extremity of the railway. This method of loading vessels is chiefly confined, however, to the elevated banks of the Wear, at Bishop Wearmouth.

If these several divisions of the labouring population of Sunderland were always in steady, regular, and uniform employment, they would be less liable to become the prey of disease than at present they are. Nothing, however, which depends on winds and waves can be regular; and from this cause the Sunderland population suffer their full share of inconvenience. When the winds are long unfavourable, the vessels are formed into fleets; and occasionally from 150 to 200 vessels may enter the harbour in the course of one tide. Such an accession of empty vessels, ready to convey away the staple product of the place, demands the employment of an extraordinary number of *heavers* or *casters*. As the great object is expedition, large wages are given; and the casters, who the previous week were scarcely in ordinary occupation, or even many of whom were unemployed, are all actively engaged, often much beyond their natural efforts, with the view of earning as much as they can. In such emergencies, an industrious heaver performs in one day two or three days work, and earns in the same time two or three days wages. The *keels* are from the same cause at the same time in full operation; and the *keelmen* in the same rate busy or overworked. The vessels sail often in a body; and until another fleet of colliers arrives, inactivity or deficient employment is the appanage of keelmen and casters.

This system of meteorological fluctuation is attended with similar, if not greater, evils among the crews of the colliers. Each vessel is manned at an average by seven or eight mariners; and when a fleet of 150 or 200 vessels arrives in the port, as this is the signal for the payment of wages, from 1000 to 1400 seamen, comparatively wealthy, are let loose on the town to spend their money, sometimes in paying debts and purchasing necessaries, but very often in revelling for days in idleness, excess, and debauchery. For several days, while money lasts, and longer with those who husband best, these laborious persons, and their families, if they have them, are in comparative affluence; and if the winds permit a few of the vessels when loaded to put to sea on their outward voyage, all goes well. But should the wind blow steadily in shore, and prevent them quitting the Wear, debts begin to be contracted, the pawnbrokers' shops are resorted to; and, as these expedients are mere temporary shifts, much penury and wretchedness ensue. From this it results, that though the seamen themselves are, while in the vessels, well-fed and nourished, their families are very frequently exposed to the severities of want in its most oppressive and complicated shapes.

Such extreme vicissitudes are likely to be productive of bodily weakness, to impair the strength and enfeeble the powers of those exposed to them; and, in point of fact, Dr Haslewood and Mr Mordey seem inclined to ascribe to these causes much of the sickliness that prevails in Sunderland. It is manifest, however, that these causes are not sufficient to produce cholera, or even any other disease, but operate simply in rendering the persons of the working population more liable to the attacks of whatever disease may be prevalent. "The sudden demands for labour connected with shipping, and its uncertain duration, naturally create great excitement for the moment, which is followed by its usual train of languor." In all probability, in order to endure these sudden and extraordinary bursts of labour, the keelmen and heavers have too frequent recourse to the usual *stimuli;* and we well know what pernicious consequences result from this practice of excessive stimulation.

Independent, however, of the influence of these causes in impairing the strength of the Sunderland population, and exposing them to attacks of disease, there are others not less powerful connected with the physical disposition and local peculiarities of the town. Though the Wear cannot be said to be a stagnating stream, it and the adjoining banks are nevertheless in certain seasons productive of miasmatic diseases, or those ascribed to the operation of *malaria.* In accounting for this phenomena, we are not to look for strict genuine marsh; for "there is," says Dr Joseph Brown in 1828, "no marshy land properly speaking." The soil of the district consists of clay, loam, and chalk, on which sea wrack is much employed as manure,—all resting on a calcareous bottom,—a structure which has been suspected, not without reason, by Mr Wilson and others, to be favourable to the production of miasmatic diseases. No fact is better ascertained than that a perfect genuine marsh is by means necessary to the production of these diseases; and the fact is forcibly illustrated by the circumstances of Sunderland. Placed indeed on a river, in which the tide ebbs and flows, it is exposed during the recess of the sea to the exhalations issuing from an extensive surface of mud, mixed with such animal and vegetable matters as must be expected from a working population so dense, and perhaps so little attentive to cleanliness. The elevation of the banks of the Wear also prevents inundation; and there is only a single spot of what can be named swampy land, about three or four miles south-west of the town; and this presents, according to Dr Brown, no conspicuous proof of insalubrity.

The grand source of fallacy regarding the miasmatic origin of diseases is the fact, that they do not annually prevail in any of the places of which they are natives. If, it is argued, any given district is really productive of ague, or any other miasmatic disease, then it ought annually to be so. Nothing, however, can be more fallacious. In the most insalubrious districts of Italy even, agues do not prevail every year to the same extent and with the same severity; and this modification, sometimes slight, occasionally considerable, is most assuredly to be ascribed to something in the season.

Though Dr Joseph Brown remarked for several years no ague, remittent fever, or dysenteric attacks in the locality and environs of Sunderland, in 1825, when the summer and autumn were distinguished by unusually high temperature, many cases, which began in bilious diarrhœa and cholera, terminated in fever, thus demonstrating the general influence of a miasmatic agent. In the autumn of the same year jaundice was unusually prevalent, indicating, doubtless, a similar epidemic disorder of the bilious secretion.

In the following year, 1826, a summer that was particularly distinguished for the long continuance of hot, dry, sultry weather, still more unequivocal proofs of the operation of *malaria* were exhibited. Numerous cases of ague appeared in autumn both in the town itself and the adjacent country, and though many yielded to the sulphate of quinine, others were less manageable. It was the character of these agues to begin with shivering, followed by heat and sweating,—to have a short and imperfect apyrectic interval, and after a few days these intermissions became less regular and distinct, and the fever terminated in a continuous remittent, with red glazed tongue, tender epigastrium, and a double exacerbation in the course of twenty-four hours. In some instances, again, this order was reversed; and fever, either continuous or remittent, appeared first, and terminated in ague or remittent afterwards. Even some persons in whom no distinct periodical febrile motions could be recognized, suffered, nevertheless, an undefined, insidious, and latent species of disordered health, not sufficient to confine them to bed, or even from their usual duties, yet fell eventually victims to the unrelenting grasp of the disorder. That all these instances of sickliness depended on an epidemic constitution operating on the locality and producing miasmatic influence, Dr Brown infers from the fact, that they all occurred in the same season, autumn; that they originated frequently in dirty lanes and alleys, strewed with animal and vegetable recrements; that they bore the general impress of miasmatic affections, as observed by him in other quarters of the globe; that they were rapidly diffused in close damp weather, and suppressed in clear frosty weather; that they were evidently aggravated by the wind blowing from the east; and because numbers were attacked simultaneously.

In 1827, Dr Brown thinks there was a manifest abatement of this epidemic influence; but as the activity of his personal observation was impaired by the occurrence of severe indisposition, he speaks with the diffidence of a true philosopher. A few cases of indigenous ague occurred, one, a quartan, ushered in by symptoms of cholera, but none with the complication of intermittent and remittent periods, as observed before. The same he states of 1828.

It is therefore quite clear from the testimony of one of the ablest of the local observers, that the banks of the Wear are occasionally productive of *miasma* and *miasmatic* diseases; and, by whatever name the fevers of Sunderland are designated, it must require singular perversion of observation to deny the source from which they proceed. It is quite evident that these febrile disorders, which Dr Brown traces to miasmatic influence, have been generally regarded as *typhus*, and supposed to be independent of such a cause. The distinction, however, which he draws, and the characters which he attaches to them, show sufficiently the difference.

It is also extremely futile to attempt, as Dr MacCulloch has done, to trace these diseases to malarial exhalations wafted by the east of Holland. How is it possible to imagine that a miasmatic material, of whatever kind, should be wafted for miles over the ocean, undissipated, undiluted, and undecomposed, when we see it every day incapable of being conveyed one mile from the seat of its origin, and invariably dispersed by brisk winds, and diluted by heavy rains? It is much more natural to think, that, if the same constitution of atmosphere prevails over some extent of the habitable globe, it may, by operating on similar localities and districts of the same physical characters, give rise to similar effects on the human constitution. Of the material or gaseous cause of these diseases we know absolutely nothing; and not even eudiometry has thrown any light on the subject. But we can observe the concurrence of the same atmospherical conditions, and the same terrestrial and physical peculiarities; and certainly it is legitimate to infer, that the same effects will, under the same circumstances, result. It is altogether gratuitous, therefore, to go beyond the east coast of the island itself to discover the existence of those agents to which we occasionally owe the operation of epidemic sickliness.

We regret that the present authors have not attempted to complete the medico-statistical sketch so well and accurately given by Dr Joseph Brown. It would have been interesting to trace the connection between season and atmospheric states on the one hand, and endemial diseases on the other, during the years 1829, 1830, and 1831. In this absence, however, of remarks on specific years and seasons, it is interesting to observe the results which his observations led Dr Brown to anticipate, as it were, three years before the epidemic cholera appeared. After expressing his belief that not only fever, but bilious diarrhœa, cholera, dysentery, liver disease, and jaundice, are all the offspring of miasmatic influence, he makes the following valuable observations:—

" That cholera is owing to *malaria* might be suspected from its prevailing at the same season, autumn, that the second crop of intermittents springs forth. It, however, appeared to me, that the cause occasionally assigned, mere cold, or this, with dampness towards night, after a hot day, was inadequate to its explanation. Were this the cause, think how certain artizans, glassmen, bakers, and others, must be harassed by it! It will, I presume, be conceded, that the epidemic cholera of India did not arise from the mere alternation of heat and cold, this cause having been repeatedly in operation without any such effect ensuing; but that it was the product of a certain *constitutio epidemica*, or, in other words, *malaria*. It was unquestionably a much more general and violent disease than that which we observe in this country; but these circumstances may indicate only a wider diffusion and greater intensity of the same cause. But the most decisive proof of cholera being the effect of *malaria* is to be found in the fact, that many of the most obstinate cases of remittent fevers which have occurred in this district commenced with this disease. During the autumn of 1827, I treated a case which commenced with cholera, passed into remittent fever, and finally into obstinate ague, ultimately cured by sulphate of quinine. I specify this case because the gradation was striking; but, during the two preceding years, the number of cases in which remittent fever commenced with the ordinary symptoms of cholera was very great."

After remarking the influence of *malaria* on the functions of the liver, and in inducing disorder of that organ, Dr Brown proceeds again to give the following argument: "The supposition that cholera springs from the same source, (*malaria*,) receives strong confirmation from this tendency of the assigned cause. Many forms of diarrhœa probably own a similar origin. Writing in October 1825, I remarked fever is at this moment prevailing; and in most of the cases the hepatic functions have been prominently affected. Many of the cases begin with bilious *diarrhœa*, many with *cholera*;" and he then refers to the history of the Milbank Penitentiary disease, and the entero-mesenteric fever of Paris, for illustrations of the same fact.

From these facts it may be confidently inferred that cholera is one of the native products of the banks of the Wear, and that, whatever difference in degree may be admitted between the indigenous product of the country and the recent epidemic sickliness, some weight at least must be attached to the fact, that the disease *does* arise spontaneously in that locality; and on this topic it is not unimportant to remark, that several of the first cases were confidently asserted to be the ordinary English cholera. After this account, we must say that we are rather surprised at the statement made in the present performance by Dr R. Clanny, that in Sunderland there are "no districts at which particular epidemic or sporadic diseases prevail." (P. 77.) Sunderland may, as he afterwards asserts, be considered, for a sea-port, comparatively healthy; but, with the facts adduced by Dr Brown before us, we cannot admit that in certain districts particular diseases may not arise, and prevail to a very pernicious extent.

We must now advert to the characters of the season,—for an account of which we are indebted to Dr Reid Clanny.

"The summer of 1831 was more than usually mild and genial. In the autumnal months, we had at Sunderland a considerable number of severe cases of *scarlatina,* and also of sporadic cholera, though neither at that time, nor in any months previous, had I seen any fatal cases of indigenous cholera in the town or neighbourhood. We had some cases of *typhus,* and, as far as I can learn, we had no epizootic among our domestic animals. In the summer of 1831, I often observed in the vicinity of Sunderland immense flocks of young toads, which I pointed out to several friends. One gentleman to whom I showed them close to his house, immediately removed a fish pond, which had always been too near his residence. We had several severe thunder storms, and consequently sudden changes of the weather in the months of September, October, and November."

A singular degree of obscurity hangs over the mode in which the first cases of malignant epidemic cholera appeared in Sunderland and its vicinity. Amidst the difficulty by which its origin, or rather introduction, is encompassed, it was commonly supposed that the first cases of epidemic cholera occurred about the beginning of October; and this, with which the personal observation of Dr Reid Clanny accords, was probably the commencement of the disease in an epidemic form. It is nevertheless well ascertained by the inquiries made by Dr Haslewood and Mr Mordey, that, long previous to this date, several cases had taken place sporadically, to which every one that saw them agreed in assigning the true choleric characters. One of these, supposed at one time to be the earliest case, already communicated in a letter by our excellent correspondent Dr Gibson in our January number, (p. 216,) and stated to have taken place about the end of August, is important in this particular, that it was believed to indicate the channel by which the disease had been introduced. It now appears, that, previous to this date, several cases of unequivocal characters had been observed. The following of this nature was communicated by Mr Dixon to Dr Haslewood and Mr Mordey:

"Allison, a potter residing in Southwich, a mile or two up the river, was taken ill on the morning of the 5th of August. At 7 P. M. when visited, he was vomiting and purging considerable quantities of a white fluid, like oatmeal and water; no urine; extremities cold; and the whole body covered with cold clammy sweat; countenance sunken; lips and nails blue; voice hollow and husky; pulse at the wrist almost entirely imperceptible; over the heart it was very feeble, beating thirty in a minute; tongue white, moist, and cold; breath cold; excessive spasms of arms and legs, and over the chest and abdomen; tenderness on pressure in the region of the liver. The treatment consisted of hot brandy and water, external heat, and frictions with hot flannels and hot vinegar; calomel and opium every hour; and a mixture of the carbonates of magnesia and ammonia in peppermint water.

"When visited on Saturday morning he was much improved; skin warm; pulse strong, 76; vomiting only occasional; purging continued; spasms of legs recur on motion; tenderness of right side continues; voice is still husky. Ordered friction of the legs to be continued, and the magnesian mixture, with extract of colocynth and blue pill. Blister to the right side.

"Sunday the 7th, Heat of skin natural; some spasms; dejections continue the same; tongue black, of an inky appearance. Continued the pills with castor-oil and tincture of senna. 8th, Has passed a bilious stool and some urine; is in a state of ptyalism; no spasms; voice becoming natural. He continued improving from this time, with symptoms of fever, and did well."

This case, the authors justly observe, presents in the characters of the discharges, the suppression of the urinary secretion, the contraction of the countenance, the blueness of the lips and nails, the enfeebled voice, and the extreme debility of the heart's action, all the characters of malignant cholera.

The second known case occurred a few days after in the person of a man named Arnot, residing at Pallion, opposite to Southwick, but farther up the river, who died with all the symptoms of the exquisite malignant disease in the course of 12 hours. That this was a case of the genuine disease, may be readily admitted, when it is stated that the patient was visited by Dr Brown. Both these cases occurred, not in Sunderland, where the great external maritime intercourse was carried on, but nearly two miles up, and close on the banks of the river.

The next case, however, took place on the 13th of August, in the east end of Sunderland, in the person of Robert Henry, a pilot, who had the most violent symptoms of the disease, and died next day in a state of coma. By Dr Miller, by whom this case was attended, it was regarded as an instance of *aggravated* English cholera.

The fourth case occurred in the person of Pearson, a shipwright, who was attacked at 3 in the morning of the 27th August with purging, vomiting, and violent cramps. He was not seen till about 7 A. M. as a dispensary patient under Dr Haslewood, when the dejections were watery, and containing flocculent matter. An hour after, at 8, he was in a state of complete collapse, blue, cold, and pulseless. After assiduous frictions and heat, with brandy, opium, ether, and ammonia, some reaction was established; and at 10 the pulse was perceptible. At 12 noon he was in a state of fever, with full quick pulse, copious perspiration, and immunity from pain of every kind. Ten grains of calomel, with some other medicines, were administered; and he was ordered to confine himself to warm diluents. Notwithstanding these favourable prospects, in the night he again became cold; and his wife, neglecting to send for aid, and only continuing the warm tea, he was comatose in the morning, and died 36 hours after the beginning of the attack.

This case was doubtless distinct and well-marked, and the author (we presume Mr Mordey) admits that he could recognize no difference between it and the exquisite and virulent cases with which he subsequently became acquainted. As this, however, was the first case he had witnessed, he was diffident of his own judgment, and he only became confident in his opinion by subsequent experience. This candour and diffidence cannot be too much commended.

About the same period, viz. the middle and end of August, similar cases of extraordinary severity occurred; and cases of cholera, all with peculiar symptoms, several severe and some fatal, continued to spring up during the month of September. In these cases, indeed, we are told by Dr Reid Clanny, that, according to the public statements made by the medical attendants who had seen them, several new and characteristic symptoms were observed, for instance, rapid sinking of the powers of life, universal coldness of the body, severe vomiting and purging, and in a few cases blueness of the skin or its parts. It is nevertheless remarkable that these were very generally maintained to be merely aggravated cases of the indigenous disease, and it was strenuously denied that any new or unwonted malady was present.

The first case which appears to have roused the suspicions of one party, and made an effectual impression on the sceptics, was that of Robert Joyce of Cumberland Street, Bishop Wearmouth. This man was attacked, according to the account of Messrs Haslewood and Mordey, about 5 in the morning of the 5th of October, and, according to the statement of Dr Reid Clanny, his son, and Mr Dixon, on the morning of Sunday the 9th October, with vomiting and purging of rice-water fluid, rapidly followed by cold skin and clammy perspiration, lividness of the extremities, intensely violent cramps, husky voice, sunk eye, shrivelled anxious countenance, great jactitation, and almost imperceptible pulse. Under the use of stimulants and warmth the pulse began to rally; but the first thing which effected a decided and permanent change was *blood-letting*. The blood was thick and dark-coloured like tar; but after it had produced faintness, the pulse became full and distinct, the spasms rapidly abated without recurring, and a state of febrile excitement succeeded, from which, however, he recovered in a few days.

The next impressive case which took place was that of Isabella Hazard, a girl of 12 years, residing in Low Street, near the Fish Quay, in a house which impends over the river on the north, and communicates on the south with a very narrow filthy lane, one of those already enumerated as running up to the High Street. The tenants, notwithstanding its locality, appeared to be respectable; and the house itself is well frequented as a public house. This girl, who was in perfect health when she went to bed, and attended church twice on the 16th, was attacked between 12 that evening and the morning of the

17th of October with excessive vomiting and purging of a watery fluid, attended with singular prostration of strength, sunk eyes, contracted features, deadly coldness of the surface, and spasms of the lower extremities. These were rapidly followed by unquenchable thirst, imperceptible pulse, total suppression of urine, and blueness of the surface so marked that the mother asked what made the child so black. Mr Cook was summoned at 4 in the morning of the 17th, about two hours after the attack, and prescribed the warm bath, brandy and hot water, sinapisms to the legs, and all the usual means, without producing any effect or any appearance of reaction at 7, when she was seen a second time. When she was visited a third time at 11, she was evidently dying, and actually expired at four in the afternoon, the disease having run its course in the space of 15 hours. This is the same case which is marked in the treatise of Dr Haslewood and Mr Mordey as that of Ellen Hayard. There is no discordance in dates as in the last case, though there is in the names.

In the next cases which occurred, which were those of the Sprouts, we again remark a discordance of dates, though perhaps explicable, which we wish had not been cognizable. The account in the work of Dr Reid Clanny appears to be the most accurate, and to that, therefore, we adhere.

William Sprout, a keelman, aged 60, previously in declining health, employed at the pier, and residing in a house about a musket-shot from the house of Isabella Hazard, had been for 8 or 10 hours labouring under diarrhœa, though not so severely as to prevent him from pursuing his employment. On the morning of Wednesday the 19th of October, however, he was so much worse that he was unable to continue longer, and on the evening of the 20th at 6, Mr Holmes was requested to see him, and found him vomiting and purging, though without symptoms of collapse. The pulse was still natural in strength and frequency, the skin natural in temperature, the tongue moist and thinly covered with a white fur, the *papillæ* at the tip and edges not red or raised, no thirst, and the spirits good. The stools, though light-coloured, were feculent, and neither thin nor frothy. Sixty drops of laudanum and the effervescing mixture were ordered.

On Friday the 21st, he was better and up at breakfast; the pulse, skin, and tongue, as before, and vomiting only after fluids; the stools, though light-coloured, consistent. Forty drops of laudanum were ordered, with wine and sago, and diet of arrow-root pudding. In the evening, when he continued to improve, a bolus of calomel and opium at bed-time, and a tablespoonful of castor-oil in the morning, were ordered. On Saturday the 22d, the vomiting had ceased, two stools only had taken place during the night, the abdomen was free from uneasiness, and the pulse and skin were natural. Mr Holmes, therefore, considered his patient convalescent, and enjoined his diet to be strictly farinaceous. The previous night, however, Sprout had eaten toasted cheese for supper, and on this very day he had, contrary to the injunctions, a mutton chop to dinner, after which he went to the river to his keel. He was scarcely absent 20 minutes, when he returned, became cold, giddy, and shivered, had cramps of the stomach, and profuse vomiting and purging. Mr Holmes, nevertheless, was not sent for till 7 on Sunday morning, when the disease was evidently rapidly verging to the fatal termination. The pulse was imperceptible, the extremities cold, the eyes sunk, features contracted, and lips blue. He spoke in whispers, had violent cramps of the legs, the urine was suppressed, and the alvine discharges were stated to be very offensive and like meat washings. Opium, wine, and brandy, a blister to the epigastrium, and warmth generally, were ordered. At next visit Mr Holmes found that the blister, which had not risen, had been removed; and sinapisms were resisted. An opiate enema was administered; and, after two hours, slight reaction had taken place. The pulse was stronger, the hands were warm, and the countenance was more natural. The stimulants and warmth were continued, the *enema* repeated, and a blister was applied to the epigastrium. Next day, 24th, complete collapse had taken place, and, though the vomiting had ceased, the stools run off involuntarily. On Tuesday the 25th, the countenance was more natural, the lips were less blue, and the purging less violent. Towards evening he became sleepy, though restless, the pupil still contracting at a strong light; and, though the other symptoms continued, the purging had entirely ceased. On the 26th, the weakness was more complete; the pulse scarcely felt, the features shrunk, the eyes hollow, the lips and nails dark blue, and the skin of the lower extremities livid. The intellect had been hitherto clear; but *coma* now ensued; and in this state he died at 12 noon on the 26th October.

The entire course of the disease, exclusive of the preliminary diarrhœa, was 7 days; but this space had been divided into two by the convalescence of Saturday morning, and the relapse of the afternoon. The case was attended throughout with the greatest assiduity by Mr Holmes, and was seen two or three times by Dr Clanny.

William Sprout Junior, the son of the deceased, residing in a low damp cellar near the Fish Quay, close by the river and his father's house, next fell under the force of the advancing malady. After a few hours indisposition, he began to vomit copiously a fluid tinged with blood, and discharged from the bowels immense quantities of rice-water fluid. When visited, the surface was cold, the countenance shrunk, the eye hollow, the voice weak, the pulse about 90, feeble, and the urine nearly suppressed. He was removed to the Infirmary, where, notwithstanding a small bleeding, the warm bath, brandy and opium, external warmth, he only rallied imperfectly; and then, viz. on the 29th, his look was that of a person under the influence of liquor. On the 30th, he was very restless; on the 31st, he became comatose and breathed stertorously; and died that afternoon.

Margaret Sprout, aged 10, the daughter of this patient, was suddenly attacked on the 26th October with vomiting, cramp of the stomach, and great loss of strength, followed by profuse purging, first of the contents of the bowels, then of a fluid like barley-water. Under the use of warmth, frictions, wine, opium, the effervescing draught, and a blister to the epigastrium, the choleric symptoms disappeared and were followed by fever. She was removed to the Infirmary, where she eventually recovered.

Eliza Turnbull, about 60, described as a strong healthy woman, one of the nurses of the Infirmary, appears to have furnished the next case. This woman was attacked about 1 o'clock in the morning of the 31st October, according to the statement of Mr Penman, and, according to that of Dr Holmes and Mr Mordey, on the 2d November; and when Mr Penman, the house-surgeon, was summoned to her between 4 and 5 A. M., three hours after, she was vomiting and purging profusely a watery fluid like oatmeal gruel, with much pain in the region of the stomach, and intense thirst; she had excruciating cramps of the arms, and especially the legs; the pulse was felt in one wrist only; the voice was puerile or suspirious; the tongue cold; the extremities cold and blue; and the fingers and toes shrunk and incurvated. From a vein opened in each arm only a few drops of inspissated blood trickled. External and internal stimulants, with opium, were freely but ineffectually used. About 10 A. M. the cramps had nearly ceased; the surface was cold as marble, and of a deep purple tint at the *epigastrium;* and from this period till 2 P. M., when she expired, the only indication of life was a languid heaving of the chest.

Of this woman, it is stated that she had no communication with any person labouring under cholera, except in assisting, about 8 o'clock the previous evening, in binding up and removing from the fever-house to the dead-house the corpse of William Sprout Junior, recently dead. From this circumstance, it was currently believed that Eliza Turnbull must have caught the disease from the dead body of Sprout; and to this argument a good deal of weight was attached both in Sunderland

and elsewhere, since that time. It must, nevertheless, be remarked, that it is distinctly stated by Mr Penman in his report, that William Sprout died on the evening of the 31st October; and it is stated with equal distinctness, that Eliza Turnbull was attacked on the morning of the 31st October, which must have been previous to the death of Sprout. Without pretending to question the fact, which must have been known by several persons, that Turnbull wound up the corpse of Sprout Junior, we must be allowed to say, that it would be well were these discordant statements adjusted. It is doubtless true that Dr Haslewood and Mr Mordey's account represents nurse Turnbull to have been attacked on the 2d November; but, while this admits of the possibility of her having been attacked subsequent to the removal of the corpse of Sprout, a contradiction is again encountered in the statement, that it is said she had performed this duty the preceding evening, which was the 1st November, while Sprout breathed his last on the 31st October. We have the best reasons for doubting entirely the possibility of the dead body communicating the disease, if it be communicable; and, supposing the dates to be rectified, and the communication to have taken place, we must further doubt, whether the alleged communicable principle could be capable of generating its product in the short space of *five*, or at most *six*, not *nine* hours, as stated by Dr Haslewood and Mr Mordey. To this, however, we shall afterwards recur.

The next case is Robert Roddenbury, Rodenburgh, or Rodenby, aged 35, an industrious shoemaker, of temperate habits, but residing with a large family in a wretched hovel, and for some time before suffering from stomach complaints. On Sunday the 30th October, he had dined and supped on pork, but not to excess, and without using fermented liquor, had retired to bed in comparative health, "At midnight, he was attacked with vomiting and purging of a fluid, resembling water gruel, which filled several chamber-pots; violent cramps of the whole body, affecting the different fingers and toes successively; his voice was quickly reduced to a whisper; nails blue; skin livid, and covered with cold sweat; pulse at the wrist imperceptible. He was visited by an irregular practitioner, who administered brandy, æther, and laudanum. At 9 A. M. on Monday, the spasms had ceased, and the only complaint he made was of pains in the region of the heart; his mental faculties continued quite perfect, till 12 o'clock, when being, at his own request, raised, he instantly expired. His attendants believe that he did not pass any urine." P. 35.

Another case occurred on the 31st October, in the person of Thomas Wilson, keelman, aged 51, who was attacked about four o'clock with the usual gruel-like vomiting and purging, and cramps, rapidly followed by coldness of the surface and extremities, failure of the pulse, shrinking of the features, and all the usual symptoms of the disease, terminating in death in the short space of eleven hours, about three in the afternoon.

The death of the younger Sprout had awakened suspicion; and it was agreed among the medical officers of the Infirmary assembled at the inspection of the body, that a meeting of the medical department of the Board of Health should be held at one o'clock, on the 1st November. At this meeting, *five* cases of cholera were reported, of which four had terminated fatally; and it was then unanimously admitted, that malignant cholera was prevalent in Sunderland. At this time, also, it is remarked by Dr Clanny, that much lightning took place between the night of the 2d and 3d November; but as this occurrence was manifestly subsequent to that of the cases, it seems impossible to trace any connection between the two events. It must also be remarked, that, from the 1st of November to the 5th, no new cases occurred; but on the 5th, one case was reported, and on the 6th, *six* new cases and *five* deaths; on the 7th, *two* cases and *one* death; on the 8th, *none;* but on the 9th, *seven* cases and *four* deaths; and after this the disease proceeded in its course.

It is remarkable, nevertheless, that its progress cannot be said to be uniform and regular; for though on one day 10, 11, or 13 cases were reported, the next day, or the second after, only 6 or 8 cases were known to have taken place. Thus, on the 18th, 22d, and 30th November, there were 13 cases; on the 14th, 19th, 23d, and 25th, there were 11; and on the 26th and 28th, there were 14 cases; but on the 21st and 24th, there only 6 cases; and on the 16th, 17th, and 20th, only 8 cases.

In the month of December, the course of the disease was still more irregular and fluctuating. On the 2d, 10th, and 17th of December, 17 cases were reported; and on the 8th, 19 cases, which is the highest number that occurred during the whole period of the epidemic; but on the 9th and 11th, there were only 10 cases; and between the 2d and 8th of the month, the daily number varied from 5 to 8. After the 17th, they sunk on the 18th, to 8 cases; next day to 4; and for several days after the numbers were 2 and 3 only. The 26th December was the first day marked by no cases; the three subsequent days had one case each; the next triplet of days none; and after this only five cases occurred, at remote intervals, till the 22d, when the disease was regarded as extinct.

So far as we can discover at present in the documents before us, it does not appear that any very obvious connection between this fluctuating course of the disease and the state of the weather can be established. With the exception of the days between the 15th and 20th November, inclusive, where there was hard frost, or frost and snow, with the barometer ranging between 29.5 inches and 29.25, the season was mild and humid, and decidedly what is termed open. On the 3d, 7th, and 16th of November there was much lightning, without thunder, we presume, as the latter is not stated; and this is not an uncommon occurrence in the latter end of the autumnal months and beginning of the winter in this country. The rest of the month of November was mild and clear, or cloudy, with occasional rains. December appears, from the observations of Dr Ogden, as given in the treatise of Dr Clanny, to have been much the same onward to the 16th; and beyond this the table extends not. The greatest depression of the barometer during this period was 28.5 inches, and its greatest elevation 30.75, presenting thus a range of $2.\frac{1}{4}$ inches. Its most frequent height was $29.\frac{1}{2}$, at which it stood 12 days in a series of 48; the next greatest was $29.\frac{1}{4}$ and 28 and $\frac{1}{2}$ or $\frac{3}{4}$, at the end of which it stood 8 days in the 48, or 16, including both heights; and the next is 29 inches, at which it stood 7 days in the series of 48. The elevation of $30\frac{1}{4}$ and $30\frac{5}{4}$ it maintained during the 27th, 28th, and 29th of December, when the wind was blowing from the south and south-west. In consequence of Dr C. discovering that the instrument which he had used for ascertaining the temperature of the atmosphere and its undulations was erroneous, we have no intelligence as to that important element in the question of atmospherical influence, further than may be collected from the general, though rather vague, description of the weather.

It is evident, nevertheless, that the temperature had little influence on the progress of the disorder. During the six days of frost and snow, when it is reasonable to suppose that the thermometer must have undulated about 30 and 32 F., the number of cases reported were respectively, according to the order of the days from the night of the 14th, 10, 8, 8, 13, 11, and 8. Between the night of the 24th November again, and the morning of the 2d December, when the numbers of daily cases were most uniformly equal and greatest, the weather is stated to have been mild, with rain and wind, first from the east, then from the south, and finally from the north-west. Lastly, on the 2d, 10th, and 17th, and on the 8th, when there were respectively 17 cases and 19 cases of the disease, it rained the two first days, but was fine and mild on the others. From these facts it may be inferred, that, whatever influence the atmosphere had, it was not appreciable by any physical proofs or tests.

Various circumstances, however, are brought forward by Dr R. Clanny, which may throw some collateral illustration on the origin of the disease. We are informed, for instance, that he never remembers the town of Sunderland in so filthy a state as it was in the months of November and December; that he is confident that the quarantine restrictions on trade did not contribute to the diminution of the exciting causes of cholera; that the disease lingered particularly in certain streets and lanes, some open and some confined, but all of such a description, that the experienced medical observer could have easily *a priori* pronounced its favourite haunts; and that the parts of Sunderland in which the disease prevailed most extensively were the very places in which *typhous* fever had formerly prevailed to the greatest extent; and " which," he adds, " an experienced medical visitor would fix upon as the most likely for contagious diseases to make their commencement." (p. 76.)

On the latter point we must be allowed to remark, that the very fever which in Sunderland has been denominated *typhus*, is by Dr Brown, without regard to names or nominal distinctions, regarded as the offspring of local causes of the nature of *malaria*; and if this argument is in any degree applicable to fever, it is so in a tenfold degree to the epidemic cholera.

That there was something in the atmosphere of certain localities, must be inferred from the following statement:—

> " In those streets of Sunderland in which cholera raged we were often struck with the squalid appearance of the inhabitants in general. Their countenances were sallow, the cheeks hollow, there was generally a dark areola round the eye, and the expression of the countenance showed dejection and humility. The inhabitants often crowded round the doors of their dwellings when professional men entered their streets: some of these poor people complained of weakness and languor, and some were affected with transient nausea."—P. 80.

We do not find, in short, that either of the present authors adduce satisfactory information on the mode in which the disease originated,—whether it arose spontaneously, or was introduced, as was asserted by many, from the continent. The incredible stories which were propagated about the disease having been introduced from Holland, are easily set aside, Dr Haslewood and Mr Mordey remark, by the simple fact, that the disease was not known at that time, nor to the present day, to have prevailed in that country; nor was the argument derived from the Hamburgh vessels in any degree more valid, since none of the seamen of those Hamburgh traders which had arrived in October had been affected with the disease, nor was any case traced to communication with them. The only mode in which, if susceptible of importation, the disease could have been introduced, was by the crews of one or more of those vessels which trade to the Baltic. Of these few are freighted with a cargo to Sunderland; but the majority return after the completion of the voyage in August or September, when the seamen are paid off, and their clothes and bedding brought ashore. As cholera appeared on board several English vessels at St Petersburgh, Riga, &c. in a few cases fatally, our authors imagine that it is possible for the disease thus to have been introduced. This mode of introduction is rendered, in their opinion, probable, by the admitted inadequacy of the quarantine, and by the fact, that the Sunderland pilots ply in the track of the ships going to the south from the Baltic, in the course of which they argue, it is utterly impossible to tell what communication may have taken place. These, however, they regard as merely possible channels for the introduction of *cholera ;* and they admit themselves unable to specify the particular means by which the disease may have been introduced.

The occurrence of the cases of Allison and Arnot, in the beginning of August, on the contrary, with the observations of Dr Joseph Brown, would lead to the conclusion, that the disease was not imported, at least by vessels, or in any other mode ; and that it had sprung up spontaneously, under the concurrence of season, with some peculiar state of the atmosphere. There is no reason to believe that either Allison or Arnot, residing two miles above the town, had more communication with the crews of vessels who might have returned from the Baltic, than the inhabitants of the low sea-ward districts of Sunderland. The subsequent appearance of the disease among the inhabitants of this district was only what might be expected from the situation of the houses, the filthy and confined appearance of the lanes in which they are built, the small crowded and ill-aired apartments, and the habits of the occupants. It is a remarkable circumstance in the origin of cholera in different places, that it betrays a peculiar predilection for low wet districts, situate along the banks of rivers or pieces of water ; and that it first appeared in this manner in the houses close by the oozy banks of the Wear, is only in accordance with what has been remarked of its first appearance, and its subsequent course, in the majority of places in which it has prevailed.

The question of the subsequent propagation of the disease, whether the cases occurred in connection with the original cause, whatever that might be, or took place in consequence of personal communication or contagion, seems just as little capable of being determined by the experience of the Sunderland epidemic as by that of any of the other towns in which the disease has since appeared. The current of observation and opinion seems rather to have been in favour of contagion. " When this pestilence," says Dr R. Clanny, " first broke out amongst us, all the medical men of the place considered the disease as not contagious, as we expressed at a meeting at our infirmary, which took place on the 12th November last; but not many days afterwards we found by experience that epidemic cholera showed itself to be highly contagious." We must observe, nevertheless, that for this we have only the assertion of Dr R. Clanny, who has not adduced satisfactory evidence to prove the disease contagious. To Dr Haslewood and Mr Mordey, however, we are indebted for a considerable body of evidence on the mode in which the disease seems to have spread.

Dr Haslewood and Mr Mordey have arranged in a tabular form the particulars of 54 cases, in which the most minute inquiries were made as to the communication or non-communication of the disease.

Among these 54 cases, in 9 at least no connection whatever was traced; and if to this number be added several of the first cases which occurred, in 15 cases at least, it was impossible to trace the disease to any but spontaneous or atmospheric origin. In other 6 cases, there is no connection with any of the previously affected persons mentioned; and the individuals are stated to have been drunkards, irregular in habits, or to have resided in confined unhealthy situations, or to have been in previous bad health. The subject of one case had been nearly drowned, and had been taken into the house of a person who had died of the disease two days before; and another had been up to the waist in the river. In 10 cases the disease attacked persons residing in the same house with others previously affected; but to this fact very little importance can be attached as an argument for contagion, when it is remembered, that in the persons first attacked the disease could not be traced to previous communication, and that, if it depended on atmospherical or local causes or both, the former class of individuals were as much exposed to these causes as the latter class. In 6 cases the disease occurred in persons who had frequent communication with the sick; in one of these, (30,) in a person residing in a healthy situation. In two cases it occurred in persons who had attended the funerals of others cut off by cholera; in one case in a surgeon who inspected two bodies, and in another in the lady of one of the authors of this work, who had assisted at the examination of these bodies.

One of the strongest examples of supposed contagious origin occurred in the person of the woman Haswell, (No. 27,) who, though living in a part of the town remote from all the other cases, and without direct communication with any of them, was attacked and died of the disease. It might be doubted, nevertheless, whether this is not to be regarded as

TABULAR VIEW, showing connection between the Subjects

Date of Attack.	*No.*	*Name.*	*Residence and Trade.*	*Sex.*	*Event.*
Oct. 23.	1.	Sprout, Senior	On the Quay, labourer	M.	Died
27.	2.	Sprout, Junior	Ballast keelman	M.	Died
—	3.	Sprout	——	F.	Recovered
31.	4.	Rodenby	Quay, Monk Wearmouth, shoemaker	M.	Died
—	5.	Thomas Wilson	High Street, keelman	M.	Died
Nov. 1.	6.	Eliza Turnbull	Infirmary	F.	Died
6.	7.	Etherington	Burleigh Street, sailor	M.	Died
—	8.	Ellimore	Hatcase, pilot	M.	Died
—	9.	Haslewood, Mrs	Wearmouth Walk	F.	Recovered
—	10.	Torbock, Mr	High Street, Surgeon	M.	Recovered
7.	11.	Crawford	Low Street, an old sailor	M.	Died
—	12	Crawford	——	F.	Recovered
—	13.	Short	Low Street, fish-woman	F.	Died
8.	14.	Glover	New Town	M.	Recovered
—	15.	Swinney	Harris Lane, prostitute	F.	Died
—	16.	Wilson, Elizabeth	Robinson's Lane	F.	Died
10.	17.	Etherington	Burleigh Street	F.	Recovered
—	18.	Wilson, Margaret	Silver Street	F.	Died
13.	19.	Wardle	Bain's Lane, joiner	M.	Recovered
—	20.	Barrett	Zion Street	F.	Died
—	21.	Phillips	Sailors' Alley, prostitute	F.	Died
15.	22.	Wayman	Buck's Square, Warren Street, prostitute	F.	Died
—	23.	Embleton	High Street	F.	Died

of Attacks of Cholera which came under the notice of the Authors.

Remarks.
No contagion traced ; he laboured under diarrhœa and other disorders for some days previous to the attack. Attended by Mr Holmes.
Communicated with No. 1. his father ; died in the Infirmary.
Daughter of No. 2. Infirmary.
No connexion traced.
No connexion traced.
Assisted in removing the body of No. 2, but did not see him during life : under great alarm, and attacked some hours after.
Had been in a weak state for some time previous ; died the same day.
An habitual drunkard ; was very drunk the day previous.
Her husband examined the bodies of Nos. 2. and 4., and visited No. 6. on the 1st November.
Examined the bodies, &c. with Dr Hazlewood and Mr Mordey.
An habitual drunkard, living in a confined situation.
Wife of No. 11.
No connexion traced ; her house was crowded with friends during her attack, which continued four days ; no case amongst them ; body examined.
Nearly drowned, was taken into the house of Mr Etherington on the quay, for the purpose of recovery on the 6th, and Mrs Etherington had been to see the body of No. 7, her husband's brother, that evening.
Of irregular habits.
Grand-daughter of No. 5.
Wife of No. 7. Attended by Dr Gibson.
Daughter of No. 5, and aunt of No. 16, attended her father during his illness.
Living in a close confined house.
Wife of a land-waiter of custom-house ; no contagion traced ; had a large family, but no other case in the family ; house clean ; all continue well.
Attended the funeral of No. 15.
Had been in the river, up to the waist ; caught cold, and was attacked immediately after.
Mother of Mr Embleton, Surgeon, of Sunderland parish, in whose house she lived, and who was in constant attendance on cholera cases.

Date of Attack.	*No.*	*Name.*	*Residence and Trade.*	*Sex.*	*Event.*
Nov. 16.	24.	Nicholson, and 4 children, and 1 grandchild	Chancery Lane	F. F. F. F. F. M.	Recovered Do. Do. Died Do. Do.
—	25.	Findley	Sailors' Alley, prostitute	F.	Died
17.	26.	Tatten	Buck's Square	F.	Recovered
19.	27.	Haswell	Back Row, Bishop Wearmouth	F.	Died
20.	28.	Knell	Buck's Square, pilot	M.	Died
—	29.	Thornton	Sailors' Alley, prostitute	F.	Died
21.	30	Cummings	Near the Infirmary	F.	Recovered
23.	31.	Fell	Mill Street, gardener	M.	Died
—	32.	Melin	9. Mill Street, tailor	M.	Died
25.	33.	Five persons, names unknown	In the Sunderland Poor House	F. F. F. F. F.	Died Do. Do. Do. Recovered
26. 27.	34.	Purvis, and two children	Mill Street	F.	Died Do. Do.
28.	35.	Wilson	Sailors' Alley, keelman	M.	Died
26.	36.	Kirkman	9. Mill Street, hatter	M.	Died
27.	37.	Elliott (child)	Warren Street	F.	Died
—	38.	Woodall	Cross Street, washerwoman	F.	Died
28.	39.	Elliott	Warren Street, keelman	M.	Died
—	40.	Purvis	Robin's Lane	M.	Recovered
—	41.	Wardle	Bain's Lane	F.	Recovered
29.	42.	Eilly	Sailors' Alley	M.	Died
—	43.	Woodall	Cross Street	M.	Died
—	44.	Nason	Bain's Lane	F.	Recovered
Dec. 2.	45.	Fairley, Mrs	Cholera Hospital	F.	Died

Remarks.
The mother assisted in laying out the body of No. 15; the children had no communication with any one affected with the disease; they were attacked before the mother;—an infant.
Communicated with No. 21.
Sat up with No. 22.
Had no direct communication; this case occurred in a part of the town remote from all the other cases.
Residing with, and son-in-law of, No. 26.
Communicated with No. 21.
Attended No. 27; lived in a healthy situation.
The house in which he lived communicated with that of Nos. 21 and 29 in Sailors' Alley, which runs parallel with that of Mill Street.
No. 9 is a lodging-house, in which some persons had previously died; Melin slept there on his way from Edinburgh to Manchester.
There was no direct communication of persons affected with the workhouse; but the sedan, in which the patients were conveyed, was kept there, and the inmates amused themselves by carrying each other about in it.
Aunt of No. 5, and grandmother to the children, and, of course, related to Nos. 16 and 18.
Brother of No. 34, whose funeral he attended on the 28th; he was attacked the same night.
Died in hospital; a lodger. Vide No. 32.
Related to, and communicated with, Nos. 26 and 28.
She washed the clothes which were worn by No. 23.
Father of No. 37; related to 26 and 28.
Brother-in-law of No. 39, was attacked shortly after visiting him.
Wife of No. 19, was attacked soon after laying out the body of a girl, who died of Cholera the same morning.
Assisted in carrying No. 35 to the grave; was attacked at 8 P. M. the same night.
Husband of No. 38.
Applied friction, &c. to No. 41.
Head-nurse of the hospital.

Date of Attack.	*No.*	*Name.*	*Residence and Trade.*	*Sex.*	*Event.*
Dec. 2.	46.	Knell	Warren Street	F.	Died
7.	47.	Todd	Warren Street, pilot	M.	Died
11.	48.	Carr	Stamps Lane	F.	Recovered
12.	49.	Carr, aged 6 years	Ditto	F.	Died
15.	50.	Carr, James	Ditto	M.	Died
19.	51.	Carr, J.	Ditto	M.	Died
8.	52.	Bittlestone, aged 7 years	Hedworth Street, Monk Wearmouth	M.	Recovered
—	53.	Bittlestone	Ditto	F.	Died
—	54.	Bittlestone	Ditto	M.	Died

an instance of spontaneous or atmospherical origin, totally independent of communication; and, indeed, there was nothing to prevent any individual, after the cases of Potter and Arnot, from being attacked in an isolated independent manner. On this point, however, the following statements may be placed before our readers, in the language of Dr Haslewood and Mr Mordey.

"To many of these cases it may be objected, that the subjects were residing in situations where the cause of the disease, be it what it might, was known to be active. To the following, however, the objection does not apply; the persons attacked never having been in the affected districts, but having taken the disease after communicating with those who had been removed from such situations.

"On the 31st of October, two persons died of Cholera,—Rodenburgh in Monk Wearmouth, and Sprout in the Infirmary fever-ward. Both bodies were examined the following morning; the former by Dr Haslewood, Mr Torbock, and Mr Mordey; the latter, in the presence of those persons and others, by Mr Penman.

"The nurse of the Infirmary, who assisted in removing the body of Sprout to the dead-house, and had no other communication with the fever-house, was attacked nine hours afterwards and died.

"Mr Penman (who wounded himself in the dissection) was attacked the same evening with sudden giddiness and faintness, while walking; and with great difficulty got home. This was succeeded by violent watery diarrhœa, with cramps, and great prostration of strength. He recovered under the use of brandy, opium, and calomel; but continued in a state of low fever for several days.

"On the 6th of November, the wife of Dr Haslewood was at-

Remarks.
Lived in the house of No. 39, her son-in-law, and was mother of No. 28.
Same house as Nos. 39 and 46.
No connection traced.
Daughter of No. 51.
Son of No. 51.
Husband of No. 48, and father of 49 and 50.
No connection traced.
Sister of No. 52, on whom she was in constant attendance.
Father of Nos. 52 and 53.

tacked with Cholera: the case is given in a former part of this work. She communicated with her husband on his return home.

" Mr Torbock was attacked with the disease on the same day." —Pp. 134-135.

" Mrs E., mother of a surgeon who was in constant attendance on Cholera cases, resided in the house of her son, and never went out. She took the disease, and died.

" The person who washed the clothes, &c. used by this patient, took the disease.

" The Cholera Hospital is situated to the south of the town, in an airy, open situation; the wards were large and lofty. In this establishment, four females were employed as nurses and washerwomen; all, however, occasionally employed in administering to the patients. Of these, the principal nurse, who was indefatigable in her attention, took the disease in its worst form, and died in eight hours. Another, Elizabeth Snipes, was attacked with diarrhœa, and other preliminary symptoms. She recovered; but three days afterwards committed an error in diet, was attacked with cholera, and recovered.

" The porter of the hospital was attacked with diarrhœa, and great nervous agitation: he quickly recovered under proper means." —Pp. 135-136.

From these facts, the authors think that it is no longer to be doubted " that the disease propagates itself in strict accordance with the laws of contagion."

On the application, however, and the competency of these points, to demonstrate the contagious nature of the disease, we feel it requisite to make two observations.

In the first place, if cholera be contagious at all, it is admitted by all those whose opinion is best entitled to consideration, that it is communicable from one person to another only, and not by means of *fomites* or impregnated articles. We do not pretend on this point to give a positive opinion grounded on personal observation; for we should be inclined, from what we have seen, to assert, that it is in no mode whatever communicable. But we are not so exclusive, as not to allow others who think they have sufficient ground for the belief, to maintain that the disease is communicable from one person to another, without the intervention of a third healthy person, and consequently, without the medium of *fomites*. With the view, therefore, of allowing the facts and arguments adduced by others to have their full weight in the discussion of the question, we throw out of the scale personal observation altogether; and we remark, that Dr Gibson, by far the most temperate and judicious of those who entertain the opinion that the disease in this country is propagated from a sick to a healthy person, informs us, that he never saw any reason to believe that the disease was conveyed, or could be conveyed, by a person in health from the sick to the healthy. It is important to remark also, that Dr Gibson, in his original experience of several years in India, never saw any proof of the disease being contagious in propagation, but many to the contrary. To the idea of personal communication of the disease, he was led by his experience at Sunderland; and the same opinion, we believe, is adopted by Dr Peebles, formerly of Rome, and who visited Sunderland and Newcastle during the existence of the epidemic. If this view be well founded, it is impossible that either Mrs Haslewood or Mrs Embleton can be regarded as examples of the contagious communication of the disease; since neither Dr Haslewood nor Mr Embleton were themselves affected. As to the cases of women taking cholera after washing the bed-clothes, &c. they seem so very incredible, that, in so far as the clothes and the washing are concerned, it appears impossible to admit them at all as instances. It is at least certain, that the persons who wash the clothes of typhous fever patients,—a disease unquestionably much more contagious, are not thereby frequently attacked by fever; and, indeed, we scarcely remember, in the course of a long period of knowledge of the disease, any very well authenticated or decisive instance. Washing, indeed, is the grand preservative against contagion; and when it is remembered that the clothes of plague patients are often washed with impunity, and that the water-carriers of Constantinople and Aleppo, almost without exception, escape during plague epidemics, an unbiassed reasoner would pause ere he admits that those who wash the clothes of cholera patients ever derive the disease from this source.

But let us take another view of the case. Are there any circumstances, more favourable to the origin of cholera during an epidemic state of the atmosphere than those of washer-women? Alternately immersed in moisture or humid vapour, and exposed to a rapid and effectual mode of cooling; subjected to long-continued laborious exertion, generally with much privation and scanty fare, and, indeed, supplying these deficiencies not unfrequently by the use of spirituous liquors; at one time over-heated in their small and confined apartments, and immediately after exposed, in the prosecution of their duties, to the full influence of the cold air,—it would be singular, indeed, if they escaped the disease. No one who has ever seen the manner in which these laborious members of the community earn their subsistence, can doubt their liability to attacks of epidemic disease, without having recourse to contagious principles. With the same justice it may be argued, that, because washer-women are liable to rheumatism, catarrh, peripneumony, and *hæmoptysis*, these diseases are contagious, as that cholera is. If, we repeat, the disease can attack, as is clearly proved, any person spontaneously, then certainly it may as readily affect washer-women as any others; and they were liable to be attacked whether they washed the clothes of a cholera patient, or of one affected by gout, rheumatism, or insanity.

Another fact afforded by the Sunderland epidemic is liable to the same degree of doubt. The five individuals of the poor-house who were attacked by the disease, could not in all probability have received it from the sedan chair in which they amused themselves with being carried and carrying each other. If clothing, according to the view of Dr Gibson, cannot imbibe and retain the poisonous principle, *a fortiori*, much less can the materials of a sedan chair, with which the surface of the patients' persons never were in immediate contact. That the disease might have, with equal probability, sprung up spontaneously among them, may be inferred from the fact, that it actually arose in this manner in the poor Lunatic Asylum of Edinburgh, in the month of April, and cut off six persons. The first case in this institution must have been one of spontaneous or atmospheric origin; for no visitor is admitted without the permission of the civil or medical officers of the institution.

The influence of the dead subject in communicating contagious principles is still more doubtful. If there be any truth in physiological principles, it seems quite absurd to imagine, that after the vital actions have ceased, any principle depending on their action can exist. Infection is in all instances the result of living processes in beings still endowed with life, and requires for its production the operation of the living organism. Every contagious principle, whether fluid, vaporiform, or gaseous, must be the result of organic, not inorganic, action. The moment life is extinct, all organic processes cease, and give place to a train of actions purely chemical. As the constituent elements of the inanimate body act on each other, and are acted on by the atmosphere, they enter into new combinations, and give rise to new products, none of which, however, resemble the infectious principle or principles of diseases. The effect of these chemical changes is rather to counteract the formation of a contagious principle; and as these chemical actions increase in power and extent every moment after death, the longer the period suffered to elapse from that time, the less likely is the dead body to communicate infection.

These considerations are applicable to every species of disease reputed infectious, in which a specific matter, the vehicle of the infectious principle, is not generated. Typhous fever, measles, scarlet fever, and hooping-cough are all of this nature, and must be regarded as incapable of communication by the dead subject. In the case of small-pox, on the contrary, in which the operation of the poisonous principle gives rise to a peculiar suppuration, it is possible that the matter may communicate the disease precisely as it does in the living subject. But to the certainty of this effect, it is indispensable that no chemical changes sufficient to produce decomposition shall have taken place. The same may be said of the vaccine disease, in which the poisonous agent is contained in the lymph of the vesicle; but the effect of which we also know that decomposition utterly destroys. In plague there is some doubt; many persons believing that the pestilential bubo and carbuncle do not contain the matter of the disease, but are merely a species of critical abscess, or at most an effect of the pestilential action on the system. One fact we know with certainty, and can state with confidence, on this point. In the plague of Vienna of 1712, 1713, and 1714, the physicians fearlessly inspected several of the bodies of those cut off by the disease, without contracting any of its symptoms; and in that of Aix and Marseilles during 1721 and 1722, MM. Deidier, Robert, and Rimbaud, performed numerous dissections, and repeated experiments with the fluids of the corpses, without remarking in any one present any symptom of contagion. The plague is admitted by all, except Dr Maclean, to be the most contagious, and decidedly contagious disease incident to mankind.

Nor is it requisite, as some inaccurate observers and loose reasoners on this subject have done, to attach any importance to the fact, that the fluids of the recent dead subject, inserted by a puncture, or applied to an abraded surface, produce among other few effects, a most fatal and unmanageable species of inflammation and fever. In refutation of this, it is sufficient to remark, that this affection, when it does take place, is one of different character entirely from the disease of which the person died from whose body the poison has been imbibed, and is exactly the same disease, whether the individual has died of fever, or dropsy; of inflammation, or *asphyxia*; of a wound, or of a lingering disease; and has been shot dead, or been hanged or drowned.

Cholera, we conceive, belongs to the former class of disorders, that is to say, to those in whom no specific matter is or can be generated; and hence, like typhous fever, scarlet fever, or any similar disorder, it ought, if really a contagious distemper, to be incapable of communication by the dead subject; and whatever may be asserted by rash and half-learned speculators, who equally disregard sound theory and indisputable facts, we maintain that we have hitherto become acquainted with no fact, or set of facts, which would induce us to modify the opinion now expressed. It is not here enough to tell us that one positive fact is worth 20 or 100 negative ones, and that, because a person who has touched a dead body, or followed the corpse of a relative to the tomb, is attacked with *cholera*, this is therefore to be held as a proof that he received the disease from the body of the deceased. Was it impossible for the individual attacked to have been affected with the disease, as many other persons, by atmospheric agency, operating on his system when under the depressing influence of grief, of consternation, or a horror-struck fancy, at witnessing death in a form so unusual? Has fatigue and anxiety no influence in enfeebling the system, and rendering it an easy prey to the inroads of epidemic disease? Does not want of sleep, and the consequent exhaustion, and the *stimuli*, perhaps imprudently, under such circumstances, resorted to, often induce a disordered state of the functions, in which the transition to the epidemic disease is easy? To adduce one or two instances of cholera occurring in a person who has dressed a corpse, or attended a funeral, is altogether a very inadequate mode of proving a point so liable to numerous sources of fallacy.

If we throw the mere physiological arguments, however, out of the question, and inquire into the evidence furnished by actual facts, we find that it is totally against the idea of contagion from the dead subject. We shall not here adduce the experience of the East India practitioners, who, with a very inconsiderable exception indeed, have never admitted the infectious properties of cholera in the living subject. A more candid and impartial method of reasoning shall be employed; and we shall appeal to the experience of the Russian physicians during the epidemic of 1830–31, because most of these gentlemen began at least with being decided contagionists. During the Moscow epidemic, which lasted from the 25th September 1830 to the end of January 1831, and in which every measure was conducted in the most regular and systematic manner, and with the perfect efficiency, which is afforded by a well-organized military despotism, Drs Jahnichen and Marcus inspected with the utmost care the whole of the organs contained in the head, spinal column, chest and belly, in the corpses of *fifty cholera patients*, and minutely recorded the appearances in *forty*; and yet, during this tedious and laborious duty, lasting for several weeks, not one of the individuals who conducted the inspections, and who were present or assisted, ever betrayed the slightest symptom of cholera. In St Petersburgh, in the like manner, where many bodies were inspected, no proof of contagion by this channel was afforded; and we are informed by our correspondent, Dr Gibbs, that Dr Siedlitz, who had inspected many bodies, never saw a single example of the disease being thus propagated. The fact of the immunity of those who dug graves and buried the dead, already given in this gentleman's last communication, is of the same nature.

Our own experience is of the same character. A considerable number of the corpses of choleric patients have been inspected in Edinburgh and the neighbourhood, yet without furnishing a single instance of the disease being produced in this manner in any one concerned. At one hospital in this city, about 30 bodies have been inspected; in another about 20; and in a third 52 subjects at least have been examined with the greatest care; and though in the last instance this duty occupied those engaged from four to five hours daily, not one instance of cholera has taken place in any one of them.

The foregoing facts and arguments we urge with the sole view of rectifying what we conceive to be a fallacy in the mode of reasoning adopted by the authors before us. It appears that the number of attacks after funerals was strikingly great at Sunderland, and led to the idea that the dead subject must be contagious. Dr R. Clanny informs his readers, that "it was while performing the last offices for the dead that contagion showed its greatest force, and such cases in this town were astonishingly numerous;" and Messrs Haslewood and Mordey state, that so "many persons took the disease after having been employed about the dead bodies," that "it would appear either that the emanations from the dead are more actively infectious, or that mental affections have rendered the persons employed peculiarly susceptible." We willingly admit the fact as thus stated; but we cannot, for the reasons already assigned, adopt the first explanation. It seems much more consonant with the just and rational view of the matter, to think that all these persons residing, as they did, much in the same locality, and certainly existing in it, breathing a similar atmosphere, living in the same manner, and observing the same habits, were on slight exciting causes brought under the influence of the disease.

That persons attending funerals, or winding the bodies of the dead, should be attacked with the disease, is not more wonderful nor more difficult to understand, than that those who never were placed in such situations were attacked. The shortness of the interval also which elapsed between the alleged cause and the effect forms a very strong objection to the validity of the argument. In the case of nurse E. Turnbull, only five hours elapsed between the alleged cause and the effect; and in Mr Penman's case the interval appears to have been not much longer. This is a period of incubation infinitely shorter than in plague, fever, or any disease decidedly contagious; and, unless we have more precise information on the shortest period which may elapse between exposure and the developement of the disease, it would be not less irrational than credulous to admit such occurrences as examples of infection.

The foregoing facts, indeed, prove to demonstration, that the dead subject is quite incapable of communicating the disease; and this conclusion is only in strict accordance with every rational and sound physiological principle. It is nevertheless remarkable, that those who maintain the disease to be communicable by contagion do not perceive, that, by assuming the dead subject to be a source of contagion, they neutralize the force of their own arguments, and weaken the hypothesis which they undertake to defend. If cholera be really contagious, its contagious properties, like those of fever, must be restricted to the duration of life, and cannot, on strict physiological principles, operate after death. If, on the contrary, a few persons become casually affected at funerals or after touching dead bodies, then it may be most safely inferred that this disease is *not* contagious, and that these cases are like others spontaneous in origin. We trust we shall hear no more on the contagion of the dead subject.

After this digression we must say, that, if we consider carefully, deliberately, and impartially, all the cases in which the attacks may be accounted for on the ground either of locality, atmospheric phenomena, irregularity, exposure to cold and wet, to the depressing passions and similar debilitating causes, and if we strictly scrutinize those cases which are alleged to have occurred after communication with infected persons,—we shall find that the evidence for contagion dwindles into downright insignificance. The original cause of the disease seems, according to the observations of both authors, to have been some general atmospherical constitution, much of the same kind in its operation as that which gives rise to influenza. Thus it appears, that many more than those actually attacked complained of various uneasy sensations referred to the alimentary organs. We have the testimony of Dr Haslewood and Mr Mordey to prove, that the majority of sufferers were persons enfeebled by old age, previous disease, the abuse of liquor, scanty food, insufficient clothing, and long residence in places void of fresh air; while it was very often remarked, that the attack immediately followed some error in diet, or accidental exposure to wet and cold. It is very true that these gentlemen represent the most powerful cause to be continued exposure to the alleged exciting cause of the disease,—the atmosphere of *cholera* patients. But we must be allowed to ask, is not this argument rather of an equivocal description? Whoever is exposed to the atmosphere of choleric patients not in hospitals, is evidently exposed to the original causes of the disease, whether terrestrial, local, or atmospherical; and, if such a person escapes, it must be in consequence of avoiding the immediate exciting cause or causes.

The great proportion of females attacked in Sunderland may be explained in various modes. Of the 54 cases given tabularly by the authors, 38 took place in females; and this, which is two-thirds of the attacks, perhaps represents fairly enough the proportion of the sex attacked during the epidemic. To explain this discordance, it is to be remarked, 1*st*, that there is a very large proportion of females in Sunderland; 2*d*, that most of the males were at sea during the great rage of the epidemic; and 3*d*, that they are less warmly clothed than the men, whose mode of life obliges them to wear flannel under-dress. The deaths among females between 15 and 50 years of age were more than double those of the men.

The characters of cholera in Sunderland were quite the same, as our subsequent experience has shown us, in many other places. The description given by Messrs Haslewood and Mordey, though rather stiff, is extremely faithful and accurate. With that character, and as a good specimen of the work, we subjoin it.

"*Premonitory Symptoms.*—In general it has been found that slight oppression of the breathing, with a soft and somewhat accelerated pulse, a degree of mental depression and inaction, anxiety of countenance, giddiness, and some muscular debility, are the earliest indications of the disease: the abdomen almost invariably feels distended, and is affected with slight, transient pains: the urine is scanty and pale. These symptoms are usually followed by a moderate diarrhœa, the discharges being natural, consisting of the usual ingesta: the character of the discharges, however, (if the diarrhœa continues long enough uninterrupted by other violent symptoms), gradually changes; and they have, in some instances, assumed precisely the choleric character before any vomiting, cramp, or collapse had unequivocally declared the nature of the disease. Two other symptoms remain to be mentioned, which are of very frequent occurrence, and which, in conjunction with those previously noticed, may be considered almost diagnostic. We allude to slight cramps affecting the fingers and toes, or prevailing still more generally, and coming on during the night; and to a numbness, and feeling of inability to move the limbs, approaching to paralysis: it is not a real inability, as a strong effort is sufficient to dispel the illusion. But the sensation recurs; and it is fortunate for the patient if it create sufficient alarm to induce him to seek, without delay, medical assistance.

" After the duration of the premonitory symptoms for a period varying from a few hours to as many days, the disease manifests itself in a manner which, once witnessed, can never be forgotten.

" *First stage, or that of collapse.*—In a great proportion of the cases, the violent symptoms have commenced between midnight and an early hour of the morning.

" The first alarming symptom is commonly a sudden feeling of faintness, with tingling in the ears, and loss of sight; and not unfrequently the patient falls down insensible. This attack is immediately followed by a burning pain at the pit of the stomach, and commonly by violent purging, vomiting, and cramps: great pain in the fore part of the head, or in the back, is an occasional, though rare, symptom of this period. The countenance becomes altered with great rapidity, assuming an appearance resembling that of old age; the eyes are sunk in their sockets, and surrounded with a dark areola; the lips are pale and blue; the nose appears sharp and shrunk; and in half an hour the countenance can scarely be recognized: the skin is generally cold and damp; the hands and feet, especially the nails, are blue—sometimes as dark as if they had been dipped in a solution of indigo; and the skin on the fingers and toes is sodden and shrivelled: the tongue is moist, cold, and flabby; respiration is oppressed and difficult; and the breath feels cold to the finger introduced into the mouth. One of the most striking changes is that produced in the voice, which is reduced to a husky whisper. The pulse sinks rapidly, sometimes becoming instantaneously imperceptible at the wrist; when perceptible it is but as a thread, and its frequency is increased.

" Such are the symptoms which have ordinarily been witnessed in severe cases of the disease as it occurred in Sunderland; but the individual cases have presented considerable variations in the general severity of the disease, in that of particular symptoms, and in the order of their succession. In some of the worst cases the vomiting and purging were extremely trifling; a state of complete collapse was formed almost in a moment, and preceded only by a single attack of cramp, with the discharge from the mouth of a few ounces of clear fluid: in some instances, especially of children, the cramps were not observed to occur at all. The patient lying deadly cold, yet sensible in an extraordinary degree to the stimulus of heat, so as to express great annoyance at the use of external warmth, he complains of a burning pain at the stomach, with great thirst, calling urgently for cold water. The intellect continues unaffected, though sensation is depraved or blunted; for the arm does not shrink when the lancet is introduced. The skin loses its natural tension and elasticity, and the orifice made by the lancet is sometimes quite bloodless. This state usually terminates in coma, or furious delirium, to which death quickly puts an end.

"In the *milder cases* the evacuations were profuse, the cramps unremitting, the coldness and collapse less rapid in their approach: but, invariably, some time before death these symptoms have disappeared, and it seemed that the stomach had lost its sensibility; the most powerful remedies, emetics or stimulants, appearing to produce no effect whatever.

"*Second stage, or that of reaction.*—When the cold blue stage does not prove fatal within twelve hours, it is, we believe, invariably followed by some degree of reaction, indicated by warmth about the præcordia, and by increased force of circulation in the larger vessels; though this does not extend far, nor, in the worst cases, restore the pulsation at the wrist. The pulsation in the femoral artery, for instance, indicates that the heart is acting with force; but it seems as if the blood had undergone some change, which renders it less capable of overcoming the friction or resistance of the smaller vessels. At this period, then, we date the termination of the first stage of cholera: febrile excitement supervenes, of severity and character depending, in a great measure, on that of the former stage; but in the worst cases rapidly fatal, with coma or delirium.

"*Detailed account of the symptoms of the first stage of cholera.—Vomiting.*—We are not aware of any case of cholera in Sunderland in which vomiting did not occur in some period of the disease, but the quantity discharged has been occasionally very trifling; and the vomiting is rarely attended with much effort, the fluid being expelled apparently by the action of the stomach alone, unassisted by the abdominal muscles. The appearance of the choleric discharges is very similar to that of barley-water, or of a solution of soap in hard water, consisting of a clear fluid, with more or less of a white flocculent matter floating in it: there is also, very generally, a small quantity of a brown granular-looking substance which adheres to the bottom of the vessel. When the flocculent matter is abundant it collects into a stringy adhesive substance, which floats on the surface of the clear liquid, and it is then occasionally of a brown colour—derived probably from a mixture of the brown substance before alluded to. It has a considerable resemblance to albumen coagulated from the serum of the blood. The fluid is generally described as being tasteless; in some instances as being sour. When reaction is established—and not till then—a bitter taste is perceived if the vomiting continue. The discharges possess a very peculiar smell not easily described, but easily recognized when once experienced: perhaps the term *fusty* best describes it.

"*Purging.*—This symptom, so prominent in the ordinary cholera of this country, was altogether absent in two well-marked cases of the present epidemic. In general, however, the purging is profuse; the discharges pass off with great violence, as if expelled by force through a contracted orifice. After the discharges have assumed the characteristic appearances, they are very rarely attended with flatus: the noiseless manner in which they escape is remarkable. The character of the alvine discharge is very similar to that of the matters vomited; the fluid, however, is more homogeneous, of a milky or buff colour, and sometimes of the consistence of jelly: in others it bears a striking resemblance to pus. This was so remarkable in one of the earliest cases, that it was imagined that some large abscess had broken into the intestines. The same peculiar fusty smell was always present in these discharges.

" *Cramps.*—The flexors of the fingers and toes are generally the first muscles attacked with spasm; the *gastrocnemii* and muscles of the thigh are next attacked; and, more rarely, the muscles of the abdomen, the back, and the throat are affected. The affection has been observed very frequently to confine itself to one side of the body. It is commonly preceded by a creeping sensation, or *aura,* passing *downwards,* in the course of the nerves; a single *fasciculus* of fibres begins to grow hard; and in a few seconds the whole muscle is contracted into a hard knot. When the abdominal muscles are affected, the body is bent forwards in agony; but, perhaps, the most distressing case is that in which the muscles of deglutition are affected: the thirst is incessant, and every attempt to swallow brings on an attack. The duration of each attack is generally about five minutes, though the spasm has continued unrelaxed even for a quarter of an hour: and, in an instance where the back was affected, the disease put on precisely the appearance of tetanus.

" *Appearances of the blood.*—None of the phenomena of the disease are more undeviating in their occurrence than those which are presented by the blood. From the commencement of the attack it gradually assumes a darker colour, and thicker consistence than natural. In the severest form of collapse, when a vein is opened, sometimes not even a tinge of blood appears; but more usually a few drops escape, being merely what had remained stagnant in the vessel. When the blood *does* flow, it escapes slowly, and trickles down the arm like a stream of treacle. Sometimes it collects at the orifice, coagulating as it flows, and requiring to be washed off with warm water. By pressure and friction, perhaps, it begins to flow more freely; and if this continues, the colour gradually improves. When this is the case a singular appearance is occasionally observed.—The stream consists of two distinct and separate portions, running side by side: the one still dark and tenacious; the other bright, of thinner consistence, and running with greater velocity. In the first instance where this was observed, we for a moment imagined that the appearance arose from some peculiarity of light; but close examination convinced us of the reality of the phenomenon; and, attention being now called to the fact, it was subsequently remarked by several other practitioners.

" The blood obtained from a patient in cholera coagulates quickly into a loose gelatinous looking substance; its colour, when viewed in a mass, is black; but a thin layer on a white surface is crimson. Serum does not separate at the time of coagulation; but in about twelve hours a small proportion is observed to have exuded on the surface and around the coagulum. Portions of fibrine of a leaden hue are sometimes observed separated from the dark substance, not expanded on the surface, but in patches intermingled with the rest of the mass.

"*Temperature of the body.*—The marble-like coldness experienced on applying the hand to the surface of the body in a case of cholera is absolutely startling, and, like the feeling from a table of the same substance, impresses us with an idea that it is really of a lower temperature than surrounding objects. That the temperature of the body in this disease may, in some instances, be reduced as low as that of the circumambient atmosphere, and even lower, by the evaporation of the profuse moisture on the surface, is possible; but we have reason to think that this did not occur in any case which came under our observation. In some cases where the coldness appeared most remarkable, the temperature was ascertained with great care; a delicate thermometer being introduced into the mouth, axilla, &c. The particular observations will be given with the cases in which they were made: and in this place it may be sufficient to observe that the temperature of the mouth was usually about 84°, and never below 80°; that of the surface, 70°. Respiration is invariably imperfectly performed; the slow, interrupted mode of speaking, and anxiety, show how small a quantity of air is received at each inspiration. The respiration is usually rapid, being about thirty in a minute; but when collapse is profound, the breathing becomes so extremely slow and gentle that it is with difficulty perceived. At such a time, and without perceptible pulse, it is with difficulty we can distinguish between life and death: yet life has continued in these circumstances for some hours after the attendants were preparing to remove the body as dead. Even after death, however, the muscles have, in some rare cases, continued to be affected with violent contractions. This was observed in at least one instance in this town, and the same thing is mentioned by writers on the disease, as observed in India and on the continent of Europe. It has been ascertained by an analysis performed by Dr Davy, in Ceylon, that the air expired in this disease contains not more than one-third of the carbonic acid usually contained in the breath. The degree of blueness or lividity of the surface is a very exact criterion of the deterioration of the blood: it is considerably modified, however, by the natural complexion of the patient. The discoloration occasionally disappears after death; but in other cases the hands and feet continue of a dark blue. The appearance of the face is sometimes not unlike that produced by blows; and in one instance this gave rise to a difference of opinion. A female who was attacked with the disease, and died in about twenty hours, had been engaged in a brawl the day before her attack, and had received a slight wound with a fork. This death occurred at an early period of the epidemic, when many influential persons, including some medical men, were loudly asserting that no unusual disease existed in the town. It was, therefore, very generally asserted that the patient had died of the wound, and of blows on the head and face; the marks of which, it was said, were so very obvious. The body was examined in the presence of medical men of both opinions, and the question finally set at rest by a coroner's jury.

" *Function of secretion.*—While the skin is bedewed with clammy sweat, and while the other mucous membranes are pouring out a secretion vitiated in quality and augmented in quantity, there seems to be a total suspension of all glandular secretion. During the severest suffering, the eye even of childhood is tearless, the urine is suppressed, and the dejections are devoid of bile. From a consideration of the preliminary symptoms, it will appear that one of the earliest of the train of phenomena is a diminution of the healthy secretions; of the urine, which is pale and in small quantities, and sometimes of the bile, insomuch that if that stage is protracted, the dejections assume their pale or pulse-like appearance before the accession of vomiting, giddiness, sinking, or even cramps. That digestion has been suspended for an equal period before vomiting commenced we have had convincing proof, from seeing food which had been swallowed two days before rejected quite unchanged.

" *Of the stage of reaction.*—The fatal termination of the cold blue stage of cholera occurs often without a struggle, or preceded only by a few short convulsive heavings of the chest: but in other instances a slight appearance of reaction, indicated by some throbbing of the carotids and warmth of the chest, is succeeded by sleep, from which the patient can only be roused for a moment: perfect coma succeeds; and the patient survives, perhaps, for a few hours. From the large doses of opium administered in some of the cases, we were at first disposed to attribute this state to narcotism; but we were subsequently convinced that it was by no means confined to such cases, and was rather to be attributed to the general tendency of the febrile stage of cholera to produce cerebral congestion.

" The comatose state is sometimes preceded by a sudden attack of furious delirium; the patient throwing off the bed-clothes, attempting to get up, striking every one within his reach, and raving wildly: the muscular strength exhibited is considerable; but the struggle is short, and soon succeeded by total insensibility.

" When the spasms, the vomiting, and the purging have ceased; when the pulse begins to return at the wrist, and the breathing becomes unembarrassed, and a genial warmth diffuses itself gradually and equably over the surface, the patient falls into a tranquil sleep, which continues some hours, accompanied with gentle perspiration: he awakes refreshed, declares himself 'quite well,' asks for something to eat, and is ready to be up and away. It is at this period the medical attendant is most likely to be thrown off his guard. Very limited experience, however, will convince him that there is yet a period of the disease calling for unremitting attention and decisive treatment. An almost invariable symptom at this period is a considerable suffusion of the eye; the cornea looks dull; vessels containing red blood are visible on the surface of the sclerotic, and are most numerous at the lower part of the eye.* The appearance differs from that of inflammation; the vessels are large and numerous, but terminate abruptly, rarely forming the vascular net-work observed in ophthalmia; the redness is dusky, and the affection unattended with pain. At the same time there is often some degree of stupor; and if the patient moves the head suddenly, he complains of a dull deep-seated pain. The tongue is coated with white fur, and rather dry; or becomes red, glistening, and chapped. The secretions are not restored; or, if restored, present unhealthy appearances: that of urine has continued suppressed for four or five days. When this has been the case, its restoration is attended with uneasiness in the bladder, and the attempt to void urine gives great pain,—arising, probably, from the accumulated sensibility of the mucous membrane, so long devoid of its natural stimulus. The discharges from the bowels become highly offensive, and contain an abundance of vitiated bile, and of the glutinous matter (sometimes in large masses) which gives the flocculent appearances to the earlier evacuations.

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* " The following case occurred in the practice of Dr Ogden:—December 12. John Parkin, aged 4, attacked with malignant cholera in a severe form: during the

"The patient is, in fact, labouring under a fever, bearing a considerable resemblance to the ordinary fever of this country,—assuming, in mild cases, a remittent or intermittent type, but always accompanied with a strong tendency to local congestions, especially of the brain: but where strong predisposition existed, or, in other words, when some organ was, from natural or accidental causes, peculiarly weakened, manifesting itself in it.

"The first approaches of coma are often so insidious as to escape observation; but the pulse continuing quick, with fetid watery discharges, and, above all, the continued suppression or insufficient secretion of urine, will convince the observer that all is not right; drowsiness gradually increases, and his sleep is attended with stertor: he may still be roused, and will swallow what is offered him, but quickly falls back into the same state. If the eye is examined, the suffusion is found to have increased, the pupil is dilated, and almost or quite insensible to light; and this phenomenon is sometimes confined to one eye. Complete coma succeeds.

"When the patient dies with these symptoms, it is generally within from two to six days from the commencement of the attack.

"The most decidedly favourable symptom in the second stage of cholera is a full and early secretion of healthy urine. On this symptom we may rely with safety; and without it we can never with confidence offer a favourable prognosis.

"The period of convalescence from the severer forms of cholera has been usually protracted, and several weeks have elapsed before the patient has regained his usual health: but as the subjects of the disease have, in the great majority of cases, been persons with broken-down constitutions, the tardiness of recovery cannot fairly be attributed to any peculiarity in the malady distinguishing it from

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cold stage the eyes had a dry and shrunk appearance, and the lower half of each cornea became opaque. The child recovered. In the febrile stage an onyx was formed in each cornea, where the opacity had been previously observed. For about three weeks the child was in a state of incoherence."

others of equal constitutional disturbance; digestion continues imperfect; the bowels are liable to be disordered from slight errors in diet; and in some instances, chronic diarrhœa of great obstinacy has supervened. In fact, great caution is requisite to prevent a return of the original disease.

"The most enduring memento of cholera, however, is the irritable and debilitated state of the muscular system, which continues painful on slight exertion, and subject to constant recurrence of cramps. These attacks occur most frequently at an early hour of the morning, on awakening from sleep; perhaps the patient is aroused by them: they are also apt to attack after long fasting, or on any slight disorder of the stomach and bowels.

"We have now endeavoured to give a general description of the malady whose prevalence in Sunderland and the neighbouring towns has excited so deep an interest in the country. But it is necessary to observe, that many cases occurred during the same period of a much milder character, attended with the cramps, coldness, and diminished secretion of urine; and always succeeded by a febrile stage of some days' continuance. About many febrile attacks of this period much difference of opinion arose, from the very equivocal nature of their symptoms; and it was doubtful whether the unusual occurrence of cramps, and the frequency of diarrhœa, were to be considered as exhibiting one of the innumerable varieties of type which the continued fever of this country assumes under differences of situation and season, rendering the treatment successful in one epidemic inapplicable to another; or were to be viewed as examples of cholera modified by the stronger stamina of the persons attacked, and the early application of remedial measures.

"It is certain, however, that a peculiarity of diathesis was observable in the progress of almost every prevailing disease—in their being attended with cramp; the fact was noted both in public and in private practice, among the rich as well as the poor; and persons of delicate structure and a nervous temperament have complained of them, without being sensible of any other deviation from health. How far these symptoms may depend upon mental impressions it is not easy to say; but more than one medical friend has declared, that he never visited a well-marked case of cholera without suffering from cramp in the calves of his legs.."—Pp. 2-17.

On the distinctive pathological nature of the disease, we find in neither of our authors any satisfactory information. Messrs Haslewood and Mordey have recorded the appearances of the corpses of twelve patients cut off by this disease, inspected either by themselves, or some of their professional friends. We think the tabular view which they have given will be by far the most satisfactory document on this subject.

In no disease do the necroscopic appearances communicate less information; for all, without exception, are the mere effects and consequences of morbid action; and none indicate

A SYNOPSIS of the Post Mortem Appearances observed in

Name and Duration of Illness.	*Age.*	*Brain and Spinal Marrow.*	*Chest.*	
			Heart, &c.	Lungs.
1. William Sprout; ill four days; died on 31st October. Examined 16 hours after death.	35	Dura mater highly vascular and thickened, with deposition of fibrin on its surface. Pia mater and brain much congested, especially the pons varolii, and medulla oblongata. Serum ½ oz. in the ventricles.	Right side loaded with black fluid blood; left ventricle and aorta empty.	Lungs gorged with red blood; bronchial lining red.
2. Rodenby; ill 12 hours; died on the 31st October. Examined 20 hours after death.	35	Head not examined.	All its cavities, the aorta, and the venæ cavæ, much distended with tar-like blood; large polypus in the left ventricle.	Serous membranes remarkably devoid of moisture. Lungs congested.
3. Eliz. Short; ill 3 days; died 11th Nov. Examined 9 hours after death.	45	Not examined.	Heart natural; right side filled with tar-like blood; vena cava much distended.	Lungs highly congested, crepitating.
4. Crawford; ill 2 days; died 9th Nov. Examined after death 7 hours.	55	Not examined.	Heart flabby; right side loaded with black adhesive blood.	No effusion in the cavity of the chest. Lungs gorged with dark blood. Bronchiæ contained much bloody frothy mucus.
5. Dorothy Swinney; ill 56 hours; died 11th Nov. Examined 5 hours after death.	29	Dura mater vascular; sinus filled with black blood; arachnoid milky; vessels gorged; centrum ovale dotted with black blood; no fluid in ventricles.	Heart healthy; contained a quantity of thick viscid blood.	Lungs congested, dark red; no fluid in the cavities of the thorax.
6. Mary Ramsay; duration of illness 26 hours; died 17th Nov. Examined 13 hours after death.	16	Dura mater highly vascular; veins and sinus distended with black blood; arachnoid milky; substance of brain full of black points; at the base serum 1 oz.	Right side of the heart loaded with black blood.	No effusion in chest. Lungs congested.
7. Geo. Woods; died 2d Dec.	40	Vessels of dura mater very turgid; arachnoid with coagulated lymph on its surface; pia mater highly vascular; a quantity of dark blood oozed from the cut surface of the brain; serum v oz. or vj oz. in the base.	Heart leaden coloured, cavities loaded with dark blood; fibrin on the right ventricle; venæ cavæ much distended, some ecchymosis at the apex of the heart.	Lungs much congested; much old disease. Little or no serum in the cavities of the chest.
8. Margaret Liddell; died 2d Dec. 18 hours ill.	45	Dura mater vascular; arachnoid opaque; substance of brain vascular.	Heart loaded with dark blood; its muscular substance of a deep leaden hue.	Lungs healthy. Pleura void of moisture.

Twelve Cases of Cholera in Sunderland and its Vicinity.

Stomach and Intestines.	*Other Abdominal Viscera.*	*External Appearances.*
Stomach had one large patch of ecchymosis; small intestines highly vascular, and distended with flatus. Colon contracted. Mucous membrane generally deep red; at one part softened, with blood effused on its surface. A quantity of green bile in intestines.	Viscera natural. Gall bladder full of bile. Urinary bladder firmly contracted; containing a few drops of a whitish fluid.	Muscles firmly contracted. Abdomen much retracted.
Superior surface of the stomach dull red. Mucous membrane softened and thickened with dotted redness, many corrugations, the ridges of which were tinged black. Colon sacculated from numerous contractions. No bile in the intestines, which were filled with a white fluid, and a white pasty substance.	Gall bladder distended; its duct impervious to a probe, and not permitting the bile to be squeezed out. Spleen and vena portæ contained much black tar-like blood. Urinary bladder firmly contracted; contained a little white fluid, similar to that in the intestines.	Skin felt soft and pasty. Muscles extremely rigid. Tendons very tense. Nails and fingers and toes blue. Eyes sunk.
Stomach. Mucous membrane softened. and towards the cardia vascular; in the duodenum slight patches of ulceration on elevated bases. No bile had been secreted.	Urinary bladder empty, and firmly contracted.	Hands and feet deep blue.
Externally. Small intestines livid; stomach contained a quart of dark-brown fluid. Mucous coat red at the pyloric extremity; elsewhere pale-yellow, softened, and easily removed with the nail. Small intestines the same; large intestines much contracted.	Peritoneum dry; no offensive smell. Omentum vascular. Gall bladder distended with dark bile; duct firmly contracted. Urinary bladder firmly contracted, unyielding, and empty.	Hands blue. Muscles tense.
Stomach externally vascular. Mucous coat vascular and corrugated. Intestines healthy. Stomach contained a grass-green fluid.	No effusion in abdominal cavity. Gall bladder distended. Spleen large and dark. A small quantity of pus-like matter in the pelvis of the left kidney. Urinary bladder contracted and empty.	Cheeks, nose, and upper lip purple. Arms and hands the same.
Stomach externally red. Mucous membrane much corrugated, the ridges bright red from ecchymosis; contained a yellowish-green mucus. Small intestines pink, contained flatus, and a reddish turbid matter with flocculi.	No fluid in the abdominal cavity. Peritoneum natural. Kidneys contained some purulent looking matter. Urinary bladder firmly contracted.	Face somewhat livid but plump. Nails of fingers had a central blue spot; of toes, pearly.
Stomach externally vascular, veins turgid. Mucous membranes thickened, and softened, easily removed with the nail; corrugated and ecchymosed; contained no fluid; duodenum full of a gruel-like fluid; jejunum and ilium empty. Large intestines contained a *pus*-like fluid, and flatus.	Adhesion of the omentum and liver to the peritoneum lining the diaphragm and abdominal muscles; apparently recent. Liver gorged with black blood. Gall bladder full of black bile. Bladder contracted, contained urine 2 oz.	Eyes sunk; surrounded with a dark areola. Face livid. Tunica conjunctiva much suffused. Fingers and toes firmly contracted, corrugated, and livid. Nails blue.
Stomach appeared as if it had been long immersed in water, pale and softened, contained meat, &c., and a brown looking fluid of the consistence of gruel. Small intestines contained a quantity of the characteristic fluid.	Abdominal cavity void of moisture. Omentum pale. Liver healthy, but gorged. Gall bladder distended with black bile. Bladder thickened, and contracted to the size of a fig; contained 2 drachms of muco-purulent fluid.	Eyes sunk. Countenance and extremities livid. Muscles most rigidly contracted.

Name, and Duration of Illness.	*Age.*	*Brain and Spinal Marrow.*	*Chest.*	
			Heart, &c.	Lungs.
9. Susan Clark; 24 hours ill; died Dec. 9th. Examined 12 hours after death.	18	Head not examined.	Right side of the heart, pulmonary artery, and venæ cavæ, loaded with dark tar-like blood. Pericardium contained the usual quantity of fluid.	Lungs healthy, without engorgement.
10. Rev. Mr S—; duration of illness 22 hours; died 6th Dec.	40	Nothing remarkable in the brain; slight congestion of medulla oblongata. Spinal marrow healthy.	Heart rather soft; right cavities full of blood, but not distended.	Some engorgement posteriorly, especially of the right lung. Pleura healthy. Gullet, larynx, and trachea, healthy.
11. J. Carr; duration of illness 12 hours. Examined 9 hours after death.	18	Dura mater reddish; arachnoid milky; sinus full of blood; medullary substance, when cut, displayed numerous orifices, from whence issued drops of dark blood. Cineritious substance natural. Spinal marrow perfectly natural, its veins somewhat distended	All the cavities of the heart filled with black coagulated blood. Coronary veins distended.	Lungs gorged with black blood, crepitating, air-vessels contained frothy mucous.
12. A woman who died in the stage of collapse residing at Newcastle.		Brain, spinal marrow, ganglions, and nerves, without lesion. Spinal marrow and brain firm.	Heart voluminous; right side filled with dark blood, which also loaded the venæ cavæ, and venæ azygos.	Lungs congested, particularly at the dependent parts; the blood easily removed by washing.

the peculiar nature of the derangement in *cholera*. Unquestionably the derangement is *dynamic*, or, as it is usually denominated, functional exclusively; but this dynamic disorder is rendered greatly more efficient by previous organic lesions or individual causes of impaired strength. The chief organic lesion consists in the softening, and the occasional abrasion, of the mucous membrane of the stomach and duodenum; but even these must be regarded as effects of the morbid action, not the cause of the disease. In such circumstances, it is idle to speculate on the primary or original nature of the morbid action in *cholera;* for of that we know as little, as we do of the cause of electro-magnetism or any other equal obscure phenomenon.

Dr Reid Clanny has indeed advanced several conjectures founded chiefly on analysis of the blood, which are curious enough, if not rather bold. He informs us, that, from the chemical examination of the blood of a diversity of patients in the first stage of epidemic cholera, before the commencement of vomiting or purging, he "is satisfied that the first impulse which the system receives is from the terrestrial atmosphere, through the medium of the respiratory system, to which moisture and filthy residences contribute."

Among other experiments, Dr R. Clanny made a comparative analysis of the blood of a sailor, who was bled in the Sunderland Infirmary for severe and continued headach, but without other

Stomach and Intestines.	*Other Abdominal Viscera.*	*External Appearances.*
Stomach externally healthy; contained some air. Mucous membrane softened and corrugated, covered with a strongly adhesive mucus; small intestines contained a similar fluid untinged by bile.	Urinary bladder firmly contracted against the ossa pubis, and empty. Gall bladder full of bile. Other viscera healthy Peritoneum devoid of serous exhalation; felt gritty.	Person full and robust. Eyes somewhat collapsed, and surrounded with a dark rim. Countenance placid. Lips livid.
Stomach healthy; some slightly red spots on its mucous membrane. Intestines healthy, void of contents.	Liver gorged. Gall bladder full of dark bile. Vena portæ empty. Vena cava full of dark blood. Kidneys congested. Urinary bladder full of urine.	Subject plump. No coddled appearance of fingers. The nails were blue.
Stomach externally natural. Mucous coat of a dotted redness, contained a quantity of *mustard*. Some vascularity in the duodenum. Large intestines lined with a whitish pultaceous matter.	Liver natural. Gall bladder distended; its ducts obstructed. Vena portæ and meseraic veins empty. Vena cava distended. Urinary bladder contracted to the smallest bulk.	Much sugillation. Extremities livid. Muscles extremely rigid; their margins strongly marked.
Stomach and intestines without lesion. Mucous membrane white. The whole canal lined with a creamy-looking matter.	Liver and spleen without congestion. Vena portæ empty. Gall bladder full of bile. Kidneys natural. Urinary bladder empty.	

disease, and of a married woman of 32, believed to have the incipient symptoms of *cholera*, and afterwards of the blood of a woman in a state of collapse. The following results were obtained.

	Sailor.	Female.	Collapse Woman.
Water, - - -	756	766	720
Albumen dried at 160°, -	121	110	61
Colouring matter, -	59	58	161
Free carbon, - -	32	41	49
Fibrine pressed and dried, -	18	14	6
Mur. soda and of potassium, carb. soda, and extractive.	14	11	3
	1000	1000	1000

On the two first cases, Dr R. Clanny observes, that the "albumen, the colouring matter, the fibrine, and the salts of the blood of the female are less in quantity than those of the sailor, whilst the quantity of free carbon is more abundant in the blood of the latter than in that of the former. Perhaps these differences may in part be accounted for from difference of sex, habit, and strength of system generally; but from this female undergoing the formative period, we find that the carbonic acid had left the blood, and that the free carbon was augmented." We cannot perceive why Dr R. Clanny has not attempted to remove the sources of fallacy now specified; for unquestionably the whole hypothesis which he advances in terms so unqualified rests on the foundation now specified; and it is from this character that he applies to the disease the new term of *hyperanthraxis*, (ὑπερ ανθραξ) or excessive carbonization. In the case mentioned as third, Dr R. Clanny analysed the fluids discharged from the stomach and bowels, with the following results.

	Stomach.	Bowels.
Water,	991	989
Fibrine,	5	6
Albumen,	1	0
Carbonate of soda,	2	3
Mercurial extraction,	1	2
	——1000	—— 1000

From these results, which are stated to have been very similar in a diversity of cases, Dr R. Clanny says we are compelled "to infer that the serum of the blood has been in this case percolated through the capillaries of the stomach and intestines; that there is nothing of a poisonous nature in these substances; and that the excess of free carbon is the sole cause of all the mischief which takes place in epidemic cholera." The following passage gives a more complete view of the whole hypothesis, elaborated, modelled, and fitted for general use.

"From direct experiments, I am assured that this impulse causes, in the first instance, the circulating blood to part with its free carbonic acid by an excited respiratory process. When the blood is in this state, the circulation necessarily becomes languid, for the carbonic acid is to the blood in its circulation what the spiral spring is to the balance-wheel of the watch. The free carbon of the blood is gradually restrained in its progress into the air-cells of the lungs, as well as throughout the whole circulation; for at this time not only is the whole circulation retarded, but the surface of the body also is chilled, or collapsed. From this time the animal heat, of course, declines, not half the usual quantity of carbonic acid being formed in the air-cells of the lungs. We even find the patient heavy, melancholic, and listless; the blood, leaving the extremes of the circulatory system, distends the large blood-vessels and viscera, and should the patient be worn out by poverty, old age, disease, or drunkenness, he may die from excess of carbon in the blood. To use a newly-coined medical phrase, the patient would be poisoned by the black blood entering the coronary arteries of the heart, or the arteries of the brain. Should the patient be rashly raised up, he may die from inanition, as the blood now finds much obstruction in its circulation by reason of its highly inspissated state; besides, the heart and the blood-vessels are, at this time, greatly weakened by the disease.

"When epidemic cholera takes its usual course, the blood-vessels of the coats of the stomach are generally influenced by the diseased blood; sometimes those of the stomach first, sometimes those of the intestines, and often of both at the same time. In some instances I have remarked that such has been the severity of the attack, that blood, as if drawn from a vein, was mixed with the substances ejected by vomiting. The serum of the blood is thrown off from that fluid in both instances, and the salts of the serum not only cause this impulse in the extreme branches of the arteries, but also give those acute pains and cramps of the inferior, and sometimes of the superior extremities, similar, in many respects, to what we so often observe to arise from looseness or costiveness, through the medium of the nerves of the cellular tissue.

"Having, myself, at two different times in the course of last month, been attacked with violent cramps of the bowels and inferior extremities, such as I had never experienced before, I can form some notion of the violence of epidemic cholera. When all the salts, such as are contained in healthy blood, are purged out of the system, the cramps and pains, as a matter of course, leave the body, the patient looks like an animated corpse, and we have, at this time, lymph circulating with the crassamentnm as well as serum."—Pp. 72-74.

The accuracy of the whole of this we question, not only because we believe that too much importance is attached to carbon and carbonic acid in the blood, but because we are convinced, that, though these points were indisputably settled, they neither constitute the whole changes in the blood, nor the whole pathological nature of the disease. The inspissation and deprivation of fluidity which the blood undergoes, appears to us to constitute a far more essential and uniform feature of the malady; and, providing its fluidity could be re-established, the disease would in a large proportion of instances be cured. On this subject, however, we shall add no more, and leave the matter as it stands, until the completion of several accurate experiments, which are at the present moment in progress, shall furnish satisfactory data to draw positive conclusions.

On the mode of treatment employed at Sunderland we must be satisfied with very short and cursory notice. We pass over the management of the preliminary stage as immaterial, or at least obvious. The conjoined authors lay down for the stage of collapse three indications, the first, to relieve urgent symptoms; the second, to restore the balance of circulation; and the third, to remedy the morbid condition of the blood.

To effect the first, the usual *stimuli* with opium were exhibited. For the heat and burning pain at the pit of the stomach, they found port wine negus agreeable, and cold drink by no means injurious, especially when acidulated with nitric acid. The distressing emptiness of the bowels, after profuse vomiting and purging, they found alleviated by the injection of warm bland fluids, occasionally preceded by oil of turpentine.

For the second purpose blood-letting was employed, but, unless in some cases, without much benefit. In several instances, in which evident oppression of the chest, severe cramps, and perceptible pulse seemed to indicate, if not to warrant the evacuation, from 10 to 20 ounces were drawn without relief, after which the pulse failed and never returned. In other instances, however, in which the cramps were the prominent symptoms, venesection was followed by sudden and decided improvement. In one case of this kind, in a man of 35, with the pulse at 96, but gone at the wrist, 16 ounces drawn, followed by the use of brandy and water and calomel, quickly produced reaction and restoration.

With the same object apparently, emetics were tried, and in several instances with remarkable benefit. Thus Amelia Phillips, in whom the pulse had ceased at the wrist, was rescued from a state of collapse by a full dose of ipecacuan in brandy and water, which produced energetic and efficient vomiting. In another case, that of Tate in the cholera hospital, the same remedy was followed by reaction, and even after a relapse by recovery. Tobacco was employed at Gateshead from some analogy between *tetanus* and *cholera*, with the effect of recovery in one case, but death in another.

For rectifying the morbid condition of the blood, galvanism, transfusion, and the inhalation of oxygen and nitrous oxide, and latterly the exhibition of the alkaline carbonates were proposed, but of these the inhalation and the carbonates only were tried. The inhalation of oxygen gas, though followed by the elevation of the pulse by a few beats, was soon succeeded by a corresponding degree of collapse. The nitrous oxide was employed in two instances without marked effect, except that of enfeebling the beat of the pulse. The alkaline carbonates, which were used extensively by Mr Torbock, were perhaps more effectual in relieving the gastric and gastralgic symptoms than in changing the qualities of the mass of blood. With the same view our authors employed the carbonate of ammonia, especially when greater stimulation appeared necessary. On the treatment of the febrile or reacting stage it is unnecessary to dwell, as it must vary according to circumstances. The indications are, 1. to restore healthy secretion; 2. to moderate excitement; and 3. to guard against local congestion.

The curative indications of Dr R. Clanny are much more complex, and we think too much directed to mere symptoms. It is doubtless important in a disorder so rapid in progress and so distressing while it lasts, to attend to every complaint, and alleviate every symptom as it arises. But the proposal of curing cholera by repressing the alvine discharges by the forcible insertion of a tapering cork within the *sphincter ani*, and its retention by a T bandage, seems so inadequate, so partial, and so insignificant, not to say ridiculous, that we could hardly expect it from a physician who ascribes so much to the morbid condition of the blood. "I feel much confidence," nevertheless, says Dr R. Clanny, "in recommending the remedial plug, as stated in the case of J. G.; and from analogy, we are warranted, by ample experience, of the value of the tourniquet, for the purpose of restraining hemorrhage of blood, in cases of severe wounds or accidents. The good effects of Rigby's plug in uterine hemorrhage, from whatever cause, is too well appreciated by all experienced medical practitioners, to require a remark from me.

"I see no reason why we should not restrain the draining of the serum of the blood from the system, by using a plug in the manner pointed out above; and if success be a criterion of the value of any new remedial plan, I am warranted, from principle to recommend this method of cure to my professional brethren." P. 118. We should be leading our readers into a most unhappy misconception if we led them to be believe that the frequency and profuseness of the discharges was the only evil to be dreaded. In many cases these discharges are trifling, or are easily checked; yet the disease proceeds to its fatal termination. All that can be said for such a measure is, that it may keep certain remedial substances longer in contact with the intestinal mucous membrane than they would otherwise be. But we fear they must be very manageable cases in which such a remedy is successful.

One word on the alleged and often vaunted powers of chlorine as a disinfecting agent. "Much has been said," says Messrs Haslewood and Mordey "of the efficacy of chlorine in destroying contagion. Though contagion is in itself so subtle as to be known only by its effects, occurring at periods varying from the shortest up to many days; yet, from its activity being most strongly displayed in close ill-ventilated situations where it occurs associated with offensive odours, the popular notion is, that it is very similar in its composition and character to such odours; and the idea has naturally arisen, that chlorine is equally efficacious in destroying each. The notion, however, is founded upon the gratuitous assumption, that hydrogen enters into the composition of contagion, and that chlorine is capable of decomposing the compound.

"Our confidence in this means of destroying contagion gave way under the experience of its want of efficacy during the prevalence of a malignant scarlatina which was very fatal in this town during the autumn of 1830, and the succeeding winter; for the disease extended itself with great virulence in houses where the solution was used very profusely. In one way, its use may prove absolutely injurious,—if its removing unpleasant odours should cause it to be considered a substitute for ventilation." Pp. 139, 140.

Though we are perfectly convinced from personal observation of the inefficiency of this agent, we should scarcely have ventured so far as the authors have here done. We think, ni the first place, it is now clearly proved that chlorine is totally ineffectual as a preservative against cholera and its alleged infection; but this we regard as a proof that cholera is not contagious. In one respect, therefore, the statements of Messrs Haslewood and Mordey prove too much; for in showing that it was inefficient against scarlet fever, it must either follow that scarlet fever is on certain occasions non-contagious, or that chlorine is of no use against contagious diseases. With the last part of the conclusion of Messrs Haslewood and Mordey we perfectly agree; for we have often remarked, that where disagreeable odours are removed from a fever ward or sick room, the attendants please themselves with the delusive idea that all is safe. In fever wards the great use of chlorine is this,—that, by causing the patients and attendants to cough almost to suffocation, as we have often witnessed, the windows must be opened and free currents of fresh air admitted.

We cannot conclude without observing, that a plan of Sunderland, illustrating the course of the disease, would have rendered the excellent treatise of Messrs Haslewood and Mordey complete.

Art. II.—*On the Enlisting, the Discharging, and the Pensioning of Soldiers, with the Official Documents on these branches of Military Duty.* By Henry Marshall, Deputy Inspector-General of Army Hospitals. London, 1832. 8vo. Pp. 244.

From the publication of this volume we are glad to perceive, that Mr Marshall continues to give that unremitting zeal and attention to the medical duties of the army, and to the public interests, which we have formerly had occasion to notice.

In the present work he has brought together and arranged all the most important documents in the shape of Warrants, General Orders, and Regulations, which must guide a medical officer in the responsible and often difficult duties of examining recruits, of discharging disabled men, and of regulating the amount of pension to which the faithful and meritorious soldier may be entitled. These documents Mr Marshall has interspersed with comments and occasional observations of his own, illustrative of the intention in forming, and of the practical bearing of the different regulations. He has thus supplied what we consider to have hitherto been a great desideratum, and a more acceptable work to the regimental and staff-surgeon we cannot conceive. Of the correctness of this opinion we see a strong confirmation in the patronage given to this volume by Sir Henry Hardinge, the late Secretary at War, by whom it appears that the work was originally suggested, and whom we believe to have understood the interests of the service and the duties of his department better than any other individual who has filled the office within our recollection.

Mr Marshall's work is divided into three parts, and comprises observations successively on the medical duties connected with the approval of recruits, the invaliding and discharging of soldiers, the due appropriation of their respective compensations or pensions for wounds or injuries sustained in the public service, and in the appendix we have, amongst other interesting papers, an account of the measures of other governments, as well as of our own, for recompensing their disabled soldiers. In adverting to the first of these heads, Mr Marshall offers some interesting and well-founded remarks upon the age of recruits, a subject on which we believe erroneous views to be very generally prevalent. We know the partiality which frequently exists amongst recruiting officers to enlist what are called "growing lads;" we know also, that, according to our own experience, (and we have had some opportunity of judging,) many of such lads grow rapidly into consumptions. Of this, indeed, a striking proof is afforded in the work before us, where, in a return of men recommended for their discharge, we find that nearly one-half were disabled by disease of the lungs and its kindred affection, scrofula; of these, again, a large proportion were under 25 years of age, and had not served six years. Mr Marshall fortifies his opinion of the impropriety of enlisting men at too early a period of life by a reference to several authorities amongst the medico-military writers of our own country; but perhaps one of the most conclusive which we can adduce is the following:—"After the battle of Leipsic, Napoleon made great exertions to recruit his army, and called upon the Legislative Senate to give him their assistance, to which they showed some reluctance. 'Shame on you!' cried the Emperor: * * * * 'I demand a levy of 300,000 men. *But I must have grown men; boys serve only to encumber the hospitals and road-sides.*'"—P. 6.

Mr Marshall then goes on to offer remarks upon the principal bodily defects which disqualify a recruit for the army; but as much of this has already been anticipated in his "Hints to Medical Officers," &c. &c. published some time ago, we proceed to notice the second division of the work, on disabilities occurring in the course of service which render men unfit to continue in it; and from this we observe with pleasure that much method and circumspection has latterly been introduced into this department of regimental economy, in a great measure, we believe, through the exertions of our author and of the distinguished officer formerly mentioned, who held the office of Secretary at War during the Duke of Wellington's administration. Of the necessity of such circumspection the following case amongst many others, will satisfy our readers.

"In June 1829, private C———, belonging to ——— regiment, complained that he was unable to do his duty, in consequence of pain and swelling of his left ankle. The limb was a little larger than natural, but the appearance of the swelling excited a suspicion that it was factitious. He was, however, admitted into hospital, and eventually he was detected by two orderlies with a ligature, consisting of a stocking and a pair of braces, firmly bound round the leg. C——— begged earnestly that his detection might be concealed, and he alleged that the ligature was applied 'to keep down the swelling.' He admitted that he had been in the habit of applying it in barracks, avowedly for a similar purpose. He was tried by a Court Martial in April 1830 for 'disgraceful conduct.'

"*1st,* In malingering, and feigning disease;

"*2dly,* In wilfully attempting to injure himself, with intent to render himself unfit for the service.

"He was convicted, and sentenced to receive five hundred lashes, to forfeit all claim to additional pay and pension on discharge.

"When corporal punishment was about to be inflicted, he begged to be pardoned, and promised not to repeat the crime for which he had been tried.

"It appeared on evidence before the Court, that C——— was heard to say to a comrade, that he knew a man, who lately belonged to ——— regiment, who had worked out his discharge, with a pension of ninepence a day, by pretending lameness; and that he, C———, hoped soon to be equally fortunate.

"It is impossible to estimate the extent of the evil which results from the granting, without adequate cause, even one pension of ninepence a day. There may be a number of persons who, like C———, have been encouraged to malinger by the successful manœuvres of the same pensioner. So long as premiums are held out for misconduct, it becomes a question how far it is warrantable to punish delinquences."—P. 90.

"The evils which result from discharging a malingerer from the service sometimes extend very widely. Success excites enterprize, and when many attempt fraud, some will gain their end. Hence the propriety of being extremely careful not to discharge an impostor, for his good fortune will assuredly serve as an encouragement to others."—P. 89.

After some general remarks upon the objects which a medical officer should have in view in deciding upon the cases of men proposed to be discharged, and the manner in which he ought to proceed in doubtful and suspicious cases, Mr Marshall goes on to offer in detail some observations on "disabilities referable to the brain,—to the organs of the senses,—to the viscera of the thorax,—to the viscera of the abdomen and to the genital organs,—cachectic diseases and disabilities,—and lastly, chronic diseases and disabilities of the extremities." Under these several heads many interesting cases are detailed, which, to those unacquainted with the service, will, we fear, be apt to convey an impression of our author altogether foreign to his natural disposition. Here we see nothing but scheming and imposture on the part of the soldier, with scepticism and incredulity,—some will think cruelty, —on the part of the surgeon. We must recollect, however, that the great object of this work is to instruct military surgeons so to regulate their conduct in these matters, as to obviate imposition on themselves, and consequently on the public.

We believe, that no complaint incident to the troops has been so fruitful a source of abuse as the factitious diseases of the eye, and therefore we quote the following passage.

"1. *Impaired Vision—Total Blindness.*—A great number of men used to be discharged every year from the army on account of loss of sight. During the year 1818, 477 men were discharged and pensioned in consequence of impaired vision. The number discharged from this cause appears to have become considerably smaller; for during a period of five years, or from 1823 to 1828 inclusive, 867 was the number discharged, viz. 90 on account of total blindness, 300 in consequence of the loss of one eye each, and 477 from impaired vision of both eyes. There can be little doubt that a considerable number of the disabilities for which these men received pensions were factitious. For a considerable period, partial, or total loss of vision was, in an especial manner, considered to confer a claim to a large pension for life. The bounty of government seems, however, to have operated as a premium for fraud, and an encouragement to self-mutilation. To check this disgraceful practice among soldiers, several very judicious regulations have lately been issued by the Secretary-at-War. According to the 15th article of the Pensioning Regulations, no soldier is to be discharged on account of impaired vision, provided the sense of sight is perfect in one eye. This rule will have an excellent effect in discouraging the practice of mutilating the organ of vision; for many a man might destroy one eye, who would hesitate to render himself totally blind. During the early part of the year 1828, there were thirty-three men blind of one eye at the same time in the invalid depot Chatham. Thirteen of this number belonged to one regiment. It is proper to observe, that previously to this period, it had been customary to discharge a soldier when he became blind of one eye, and to award him a pension of ninepence a day, without reference to length of service. The 19th article of the Pensioning Regulations, if it be strictly and judiciously observed, is also eminently calculated to check the practice of voluntary mutilation."—Pp. 103-104.

"Among numerous instances of strong presumptive evidence of the existence of factitious disease of the eyes which have come to my knowledge, I shall adduce the following:—Early in the year 1827, several severe cases of inflammation of the eyes occurred in ——— regiment, which was then employed in this country, and about the middle of July the disease became very prevalent. From the commencement of the affection, strong suspicions were entertained that it was artificially excited; none of the officers or children were affected with it, and but one woman. Only three non-commissioned officers were admitted into hospital, although men who had been reduced on account of misconduct, seemed to be particularly liable to the affection. Change of quarters had no influence in arresting its progress; various means were adopted with a view to discover whether or not the disease was factitious, and kept up by artificial means. The men were repeatedly removed, without warning, from their beds in one ward to another, and the first ward minutely examined for the purpose of discovering whether they had any irritating substances calculated to produce inflammation of the eyes concealed among the bedclothes, or elsewhere. Small parcels of snuff, tobacco, and salt, were found in or close to the beds of several of the men, and it was presumed that the patients had been in the habit of introducing these substances between the eyelids. Low diet, confinement to bed, and similar measures, seemed to have no influence in facilitating recovery, or in diminishing the number of new admissions. With the view of preventing the patients from having access to their eyes, some head pieces of tin plate-were constructed, which, when put on, could be secured by means of a lock and key. These machines were procured during the autumn of 1829, and, by their judicious use, the progress of the epidemic was arrested." —Pp. 105-106.

The third division of Mr Marshall's work, which embraces the pensioning of soldiers, is introduced by a copy of the warrant issued by his late Majesty in 1829, regulating the claims for pensions on account of " length of service,—wounds received in action,—disabilities contracted in the service *after* fourteen years service,—and disabilities contracted in the service *under* fourteen years service." Upon these several points many judicious remarks are offered; and we have towards the conclusion a curious history of the " measures which have been successively adopted by the British government to recompense soldiers for long service or meritorious conduct."—" During the reign of Edward IV. a grant was made to John Sclatter of four marks for the loss of his hand at the battle of Wakefield; and another to Rauf Veshynden of an annuity of ten pounds by letters patent under the Great Seal, till rewarded with an office, ' for the good and agreeable service which he did unto us,' says the patent, ' in carrying and holdying of our standard of the Black Bull at the bataylof Sherborne.'

" By the statute of the 43d of Queen Elizabeth, the justices of the peace had power to charge every parish toward a weekly relief of maimed soldiers and mariners, so that no parish paid weekly above tenpence, nor under twopence ; nor any county, which consisted of above fifty parishes, to pay above sixpence, one parish with another : which sums, so taxed, were to be assessed in every parish by the parishioners, or, in default, by the churchwardens and constables, or, in their default, by the next justice or justices of the peace."—P. 167.

We do not suppose, that even the most rigid economists of the present day will ever contemplate a return to such limited assessments as these for the support of our disabled soldiers, although they will probably not fail to contrast the scanty provisions here specified with the results of the table inserted at page 181, from which it appears, that in 1792 the number of pensioners on the Chelsea establishment was 20,150, the mean rate of pension 5½d., and the yearly amount L. 158,102; in 1829 the number of pensioners had increased to 85,756, the average rate of pensions to 10¾d., and the total amount for the year to L. 1,436,663.

Nothing, we apprehend, can more strongly evince the magnitude and importance of the subjects to which Mr Marshall has turned his attention, than the foregoing extracts; and we think that our statesmen and legislators, as well as our professional brethren, will do well to consult his pages. But it is to the profession that we naturally feel desirous to make this volume known; the more so, because we apprehend, that, amidst the multiplicity of works with which the table of every reading member of the profession is encumbered, he will be liable to overlook the valuable matter which it contains. Were it not for the author's designation as an Inspector of Hospitals, there is nothing in the title of the work which would lead a medical man to expect from it the extensive professional research which an accurate examination of its pages will evince. Amongst other sources of information to which Mr Marshall alludes, we were glad to see the following reference to a work which we have long been in the habit of consulting, and which we find to be much too little known amongst our brethren in this country.

"*The Recueil de Memoires de Medicine de Chirurgie et de Pharmacie Militaires,* consists of a selection from the reports or essays which have been transmitted by the medical officers of the French army to the head of the Medical Department. There are now, I believe, about 40 volumes of the collection published. This publication shows how much may be done by zealous and judicious management for the advancement of science and the improvement of the medical officers of an army. It is an imperishable honour to the successive heads of the Medical Department of the French army since it was commenced. How much is it to be regretted that a similar work does not emanate from the medical officers of the British army, whose opportunities of collecting interesting and important facts regarding the medical concerns of an army in various climates, are vastly superior to those of the French."—P. 147.

We cannot help expressing our concurrence in the regret here expressed by Mr Marshall; and we know that, in the records of the Army Medical Board, ample materials for such a work exist. The only difficulty would be the task of impartial and judicious selection, and perhaps this might be most advantageously accomplished by a small committee of the many experienced medical officers in and about London. We feel convinced, that the Director-general would give every facility to such an undertaking; and we are confident that, under his auspices, a work might be produced equally creditable to the department, interesting to the profession, and useful to the public.

ART. III.—*A Treatise on the Injuries, the Diseases, and the Distortions of the Spine; founded on an Essay to which the Jacksonian Prize for the year* 1826, *was adjudged by the Royal College of Surgeons.* By R. A. STAFFORD, Surgeon to the St Mary-le-Bone Infirmary, &c. London, 1832. 8vo. Pp. 302.

THIS work, consisting of the essay which obtained for its author the Jacksonian Prize for 1826, with such additions as have occurred to him since that time, is a highly creditable production. It gives in a condensed form, all the best and latest information concerning the congenital and acquired derangements of the spine; and may be considered the more valuable, that most of the facts, the descriptions, and treatment there stated, have either been acquired or confirmed by the experience and personal observation of the author.

The extensive subjects of which it treats are comprehended under 12 chapters. The first Chapter, on Anomalous formations of the spinal marrow, &c. contains chiefly an account of *spina bifida.* Here several interesting cases, among which are some of those already published by Sir A. Cooper, are detailed.

In the treatment of this disease, which may be considered a malformation, nothing is here added to that proposed and practised by Mr Abernethy and Sir A. Cooper, consisting of the repeated puncture and compression of the tumour. Two very interesting cases, however, are detailed, in which a spontaneous cure took place. In the first, the child had attained the age of 2 years and 3 months, though the *spina bifida* was combined with other malformations. The subject of the second had attained 9 years of age. In both, the cure took place by the repeated spontaneous bursting and evacuation of the fluid, precisely resembling the most approved artificial surgical treatment. It is a singular fact, also established by the results of these two cases, that the opening, by which the fluid is so evacuated, becomes covered only by a very thin membrane, which readily gives way; and thus not only prevents the accumulation of fluid, but also the supervention of *hydrocephalus*, which is a frequent fatal termination of the disease.

Chapter 2 commences the account of injuries of the spine, and is devoted to a description of concussion.

Concussion of the spinal cord, the author states, is the most frequent injury that occurs to it. It may arise from a blow upon one particular part of the spine, or from the shock caused by a concussion of the whole. " When the concussion is complete, all the parts immediately below the injury, and the muscles which are supplied by nerves arising from the inferior portion of the *medulla* are perfectly paralysed." The power of sensation is also generally lost in the paralysed parts. But when the concussion is not complete, the paralysis may be imperfect, or sensation may not be totally destroyed; in other cases either the power of motion or sensation may be affected solely. Pain, irregular involuntary twitches, and other symptoms connected with the nervous system, are also common in such injuries.

This affection of the nerves arising from the spinal cord, though generally, is not uniformly, confined to the parts below the seat of the injury. Thus, in the case of an injury by a kick from a horse on the dorsal *vertebræ*, the arms, as well as the inferior extremities, became instantly paralysed. This, the author conceives, is from the effect of the general shock, rather than the injury of the part of the *medulla* upon which the blow was inflicted.

The morbid appearances observed after death from concussion of the spine are stated to be, more or less extravasation of blood, exterior to or within the bony canal, distension, and occasionally rupture of the vessels of the membranes of the cord. The cord itself may be found reddened, softened, or inflamed, according to the degree of the injury, and the length of interval between the receipt of the injury and death of the patient.

In the treatment of this affection, there is nothing new or deserving particular notice here, except in the recommendation of the double inclined plane bed, which is so constructed as to supersede the necessity of the patient being moved,—a virtue which is of greater importance in injuries of the spine than perhaps in any other class of cases.

Concussion of the spinal cord, we apprehend, is very often complicated with contusion, subluxation, and partial laceration of the membranes or ligaments connected with it, according to the mode and degree of injury. Hence, the symptoms which continue after the immediate shock, which we conceive to be the chief effect of the concussion, are referable to one or other of these lesions, and inflammation as their consequence. Hence, also, the good effects of rest and antiphlogistic treatment, when continued for a very considerable length of time.

In Chapters 3 and 4, the author treats of fractures and dislocations of the spine. Fractures of the *vertebræ* are generally complicated with other injury, as displacement, depression, or lesion of the soft parts. When either simple or complicated, they are only to be detected by irregularity of the spinal column and the symptoms. From the specimens in existence there can be no doubt of the possibility of the union of fractures of the *vertebræ.*

In the treatment of the injuries to which we now allude, even greater attention to perfect stillness of position is requisite than in concussion ; and the author gives two cases of fractured *vertebræ,* in which death suddenly took place from a slight but rash alteration in the posture of the injured parts.

This forms a highly interesting class of injuries, not only from their very serious importance, but because it seems highly probable that something more may yet be done for their alleviation by manual operation than has hitherto been accomplished. This remark is suggested to us by the use of the trephine, which may certainly assist very materially in removing the mechanical pressure, caused by fracture or displaced bone, upon the spinal cord. Our author states, that in five cases this practice has been resorted to without success. In one the patient was obviously benefited, as sensation partially returned. By this practice, therefore, if the certain evil from pressure on the cord can be removed, complete relief will be given when no other injury exists ; and where the injury is complicated, we place the patient in a more promising state for recovery.

Chapter 5. Pathological remarks on the *vertebræ* and intervertebral substances. The diseases of these parts, the author represents to be intimately connected with what he considers "the peculiarity of their internal structure." This peculiar structure, he endeavours to show, consists in the *cancelli* being composed of "a duplicature of membrane with phosphate of lime either deposited in their texture or on their surfaces ;" a membrane *sui generis*, but, from its diseases, resembling serous and synovial membranes more than any other. Hence, he conceives, that softening of the bone, and the consequent distortion and other diseases, arise from the membranes of the *cancelli* not secreting a sufficient quantity of phosphate of lime, or absorbing too much of it after it has been secreted.

The frequency of diseases of the intervertebral cartilages are considered to arise from their peculiarly high organization—the pressure exerted upon them—and the frequent motion to which they are exposed.

Chapters 6, 7, 8, 9, and 10, are occupied with descriptions of the various diseases of the *vertebræ* and their intervertebral cartilages. In these are enumerated diseases of the *vertebræ* from rickets—general softening—*mollities ossium*—hardening of their structure—tumours formed in and pressing upon them —*fungus hœmatodes*—abscess of the substance of the bone—inflammation—ulceration and other states from syphilis—gout —rheumatism—scrofula—and diseases of the intervertebral substances—and of the articular joints and ligaments.

Of these diseases and their consequences, our limits will not permit us to select from our author even an abridged account.

Chapters 11 and 12, on the diseases of the *medulla spinalis* and its membranes, complete the work now before us. They treat of inflammation, dropsy, effusion of blood, cartilaginous specks and tumours of the investing membranes, and of inflammation, hardening and softening of the *medulla* itself.

In the inflammation of the arachnoid membrane of the spinal cord, spasms, convulsions and tetanic symptoms have been observed. And Mr Stafford gives two cases of tetanus, the one from an injury of the finger, the other a burning, in which the appearances found on dissection very much resembled those observed in two cases of true *arachnitis spinalis.* The morbid appearances consisted of increased vascularity and reddening of the membrane, effusion of serum, and other marks of inflammation.

We esteem the work of Mr Stafford, of which we have now given an account, to be one of considerable merit, and forming a good compendium of the pathology and most approved management of diseases and injuries of the spine.

ART. IV.—*Pathological and Practical Researches on Uterine Inflammation in Puerperal Women.* By ROBERT LEE, M. D. F. R. S., Secretary to the Medico-Chirurgical Society of London, Physician to the British Lying-in-Hospital, &c. &c. (From the Transactions of the Medico-Chirurgical Society of London, Vol. xvi. Part ii.) Pp. 84. London, 1831. 8vo.

WHILE MM. Tonnellé, Duplay, Dance, and Luroth were investigating the nature of puerperal fever in Paris in 1828, 1829, and 1830,* the able physician of the British Lying-in-Hospital in Brownlow Street was engaged with equal zeal and assiduity in observing the nature and effects of that pernicious disease as it occurs in London.

Dr Lee is already well known to the profession by his researches on inflammation of the veins, and especially of those of the womb; and in the course of his pathological investigations on the latter subject, he was led to remark the extreme frequency of uterine *phlebitis ;* and to infer, that to this disease must be ascribed many of those fatal disorders to which puerperal females are subject, and which have commonly been comprehended under the vague general description of puerperal fever or *peritonitis.*

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* Med. and Surg. Journal, Vol. xxxiv. p. 328.

His necroscopic inquiries had further led Dr Lee to another conclusion, which has been amply confirmed by subsequent experience, viz. that inflammation of the womb and its appendages must be considered as the essential cause of all those destructive febrile disorders which follow parturition ; and that the different forms which they assume,—inflammatory, congestive, or typhoid,—will be found to depend principally on the respective affection of the serous, the muscular, or the venous tissue, of which the organ is composed.

The chief object of Dr Lee was now to give a complete and satisfactory history of uterine inflammation in all its varieties ; and to ascertain how far the inference now stated, that these varieties were principally dependent on the greater or less affection of the different elementary tissues, was confirmed. In the accomplishment of this undertaking, though the researches of Dr Lee have lost much of their novelty by the appearance of those of the authors now mentioned, they form a most valuable confirmation of their general accuracy, and afford, in some particulars, more precise and satisfactory views on the nature and effects of this disease, than we find in the writings of the authors already mentioned. Partly on this account, and partly in justice to Dr Lee, it is requisite to give a summary view of the general nature of his paper, and the deductions to which it leads. In the performance of this task, we shall not scruple to avail ourselves of such facts and illustrations as have fallen within our own range of experience.

Between the 1st of January 1827, and the 1st of March 1831, embracing a period of more than four years, Dr Lee has had occasion to see and treat 112 cases of well-marked uterine inflammation in the British Lying-in-Hospital, and in public and private practice in the western districts of London. He has watched the symptoms and progress of these cases with the closest attention ; he has observed the effects of remedies ; and where death has taken place, he has carefully inspected the body, and distinguished the different changes of structure which have been left in the organs by the ravages of the disease.

Of 40 fatal cases, the bodies of 34 have been inspected in this manner ; and in all those which had presented during life, the characteristic symptoms of what has usually been denominated *Puerperal Fever*, Dr Lee recognized, either in the peritoneal coat of the *uterus*, or its appendages, or in the muscular substance of the organ, or in its veins or absorbents, some morbid change from inflammation, sufficient to explain in a satisfactory manner all the symptoms of constitutional disorder which had formed the prominent characters of the disease during life. The *peritoneum* and uterine appendages were found inflamed in 26 cases; in 14 cases the uterine veins were found inflamed; in eight cases the muscular tissue of the womb was inflamed or softened; and in four, the distension of the absorbent lymphatics with purulent matter, indicated the previous inflammation of that order of vessels. These facts, Dr Lee justly observes, are decidedly opposed to the opinion at this time generally prevalent in this country, that puerperal females are liable to be attacked by specific fever, which may arise independent of any local affection of the uterine textures, and may frequently terminate fatally, without leaving any change in these textures cognizable by inspection.

Before, however, proceeding further, it may be proper for many of our readers to recal briefly to their remembrance the organic constitution of those parts of the female organs which form the subject of inquiry. The womb consists of a peculiar, thick, firm, whitish, or reddish-white, substance, covered externally by *peritoneum*, and lined by mucous membrane. This intermediate substance, which is the proper tissue of the organ, though neither red nor distinctly fibrous, has been very generally regarded as muscular. Its contractile powers are manifestly displayed during parturition; but at no other period of life does it show them distinctly. It abounds in closely interwoven condensed cellular tissue, and is very liberally supplied with blood-vessels, which augment to an incredible degree during gestation, and are always well-marked in the gravid womb. This substance is also freely traversed by venous canals, which in the puerperal state become much enlarged, and which, adhering as they do to the uterine substance, are denominated *sinuses*. To the external surface of the uterine substance the *peritoneum* is attached by means of cellular tissue, communicating freely with that of the substance; and the uterine mucous membrane is still more firmly fixed by a similar layer of the same tissue. The uterine mucous membrane is void of epidermis, and it receives the minute ramifications of the uterine arteries.

Of the uterine appendages it is only necessary to say, that the ovaries and Fallopian tubes are enveloped in a doubled fold of the *peritoneum*, which is connected to them by filamentous tissue, (the subserous,) and that the broad ligaments are merely two folds of *peritoneum*, with intermediate filamentous tissue.

The presence of these component textures has a remarkable influence on inflammation of the *uterus*; and each betrays when under this process its peculiar distinctive characters in pathological and symptomatic phenomena.

The principal modifications of uterine inflammation in puerperal women, Dr Lee refers to four heads;—1. inflammation of the uterine and general *peritoneum*; 2. inflammation of the uterine appendages; viz. the ovaries, Fallopian tubes, and broad ligaments; 3. inflammation of the uterine muscular substance; and 4. inflammation and suppuration of the uterine veins and absorbents.

Though these several forms of inflammation of distinct tissues are most generally found combined to a greater or less extent in the same case, they may nevertheless be altogether isolated and independent of each other. The uterine *peritoneum*, which is extended over the ovaries and Fallopian tubes, and forms the broad ligaments, is very rarely inflamed without more or less affection of those organs which are thus contained within its duplicature; but both the uterine *peritoneum* and appendages may be severally affected when the muscular substance and the veins of the womb are quite exempt from any morbid action. Conversely, Dr Lee finds, that, though inflammatory action originating in the muscular tissue of the womb and the venous canals, frequently spreads to the peritoneal covering, yet it may be confined to the former two tissues without any affection of the latter. Though it results, therefore, from the observations and dissections of the present author, that the isolation and independence of the integrant elementary textures of which the *uterus* consists, has so much influence in confining inflammatory action to the textures in which it originates, that it may often, through the whole course of the disease, preserve this individuality of character; yet in certain cases this barrier is broken down, and the disease either simultaneously attacks two or more of the uterine textures, or attacking one, spreads to the others. Of this fact as a general principle in pathology, it is of the utmost importance for the practitioner to be aware for two reasons. In the first place, the inflammation of each texture gives rise to an assemblage of symptoms in a certain degree characteristic; and when more than one texture is affected, these symptoms, previously distinct, now mutually partake of the characters of each other; so that the physician must be prepared to form, from the character of the external signs, an estimate of the particular texture affected, and of the degree in which the affection of each predominates. In the second place, he must be prepared to employ the knowledge thus acquired in regulating the kind and extent of his remedial measures. Though all of these forms of disease are inflammatory, some more urgently require promptitude and energy than others; the phlebitic tendency must be opposed by the most decided and powerful antiphlogistic measures; and in one form, that of the uterine substance, the antiphlogistic treatment must be employed with great restrictions, and general depletion is inadmissible.

This occasional isolation and mutual complication of morbid action is not confined, the author observes, to the uterine textures. In the organs of respiration similar varieties and complications of inflammatory disorder may be recognized; and the *pleura*, pulmonic tissue, and the bronchial membrane may be either separately and distinctly, or simultaneously and conjunctly, the seat of disease. The same observation is applicable to the brain and its coverings, and to the alimentary canal and its appendages. The cerebral substance may be affected without the membranes, and the latter without the former; but in several instances both are simultaneously affected with corresponding modification of symptoms. The gastric or intestinal *peritoneum* may be severely inflamed without any affection of the gastric or intestinal mucous membrane; and the latter and its glands are occasionally inflamed without the former being affected. There are nevertheless certain maladies, in which these textures and the intermediate filamentous tissue are all simultaneously disordered. The great anatomical cause of all this isolation and complication is the filamentous tissue, which forms in one sense and at one time an insuperable barrier to the extension of inflammatory action; but in others, serves to favour and extend its progress. The justice of this remark is strongly illustrated by the facts of the essay before us.

1. *Uterine and general peritonitis*, whether separate or conjoined, produce in all respects the same effects in puerperal females, as peritoneal inflammation in the male sex. The *peritoneum* becomes red, vascular, and apparently thickened, loses its glistening appearance, and is covered by a viscid fluid or semifluid liquid, secreted from the inflamed vessels, and which is quickly separated into two portions, a thick but soft and cellular semitranslucent matter, adhering to the surface of the inflamed membrane, and a thin watery or serous or sero-purulent fluid, which trickles down to the recesses of the pelvic *viscera*. The appearances and qualities of these two portions of the morbid secretion are considerably different in different cases. In one set of cases the thick and cellular adherent portion, viz. the coagulable lymph, is abundant, and extensively distributed over the prominent parts of the uterine and general *peritoneum;* while the thin fluid is either scanty, or altogether serous, with a few albuminous or lymphy flakes floating in it, or lying at the bottom. In another class, the lymph may be scanty and confined

to a few prominent points, or stretched in a very thin layer over the membrane; and a large quantity of thick or milky serum, or even sero-purulent fluid, is found in the intervals between the *uterus* and the other pelvic *viscera*. The latter appearance is the fallacy which so long led the foreign authors to entertain the gross and absurdly unphysiological idea, that the milk was in such cases transferred by *metastasis* from the breasts, and actually deposited in the cavity of the pelvic *peritoneum;* where it made the *depot de lait*. At such puerile and silly conceits we now smile; but how many more of our ideas shall we 40 years hence, not to speak in an individual but in a general professional capacity, have occasion to consider in the same light.

Puerperal *peritonitis*, commencing in the uterine *peritoneum*, may either be confined to that division of the membrane, or extend generally, or over the inferior intestinal division at least. It is always most severe, and its traces are always most conspicuous in the uterine division, and its immediate vicinity, especially over the ovaries, Fallopian tubes, and broad ligaments. In these situations, and above all, round the *fundus* of the womb, the lymph is found in copious, thick, and extensively distributed masses. In this case the inflammatory action is confined to the inner or free surface of the membrane, and seems rather to spread over it than to penetrate into its substance, or appear at its attached surface. In other instances, however, in which the inflammatory action extends to the attached surface, purulent matter is found either in minute patches, or in prominent circumscribed deposits, and in diffused infiltrations beneath the *peritoneum*; and these appearances, which indicate the affection of the sub-serous cellular tissue, prove the facility with which the disease may either attack the *peritoneum* in both surfaces, or spread from the one to the other. The diffuse infiltration, which Dr Lee has most frequently found at the angle, where the *peritoneum* is reflected from the *uterus* and *vagina* to the *rectum*, is in all probability dependent on the extensive though loose communication of the filamentous tissue at this part of the *pelvis*.

The peculiar effects of this disease on the system are more accurately described and more carefully distinguished from similar disorders, by the present author than by any of his predecessors.

"When the attack of *peritonitis* is severe, the patient commonly lies upon the back, with the knees drawn up to the trunk of the body. At the onset of the disease, the abdomen is generally soft and flaccid, and, except in the region of the uterus, not affected by pressure. Dr Hulme has described the pain as affecting the whole hypogastric region from the commencement of the attack; but this is the case only where the disease has made considerable progress, or has extended from the *uterus* to the general investing membrane of the abdomen. Though an enlarged and painful state of the *uterus* be never altogether wanting, yet the pain often undergoes exacerbations similar to after-pains, and is often mistaken for them by careless observers, and the disease is thus overlooked till a great part of the peritoneal sac is inflamed, and the case in consequence is rendered hopeless.

" The whole abdomen at length becomes distended, tympanitic, and occasionally exquisitely painful on pressure. Vomiting of dark green coloured fluid substances follows. The pulse grows rapid and feeble, the tongue grows dry and brown, the lips and teeth covered with dark sordes, *diarrhœa* frequently supervenes, and death ensues at no very remote period.

" The invasion of pain in the *uterus* is sometimes sudden, at other times the ordinary increased sensibility of the uterus, subsequent to the efforts of natural labour, or after-pains, passes slowly and insensibly into the acute pain increased by pressure, which is the great characteristic symptom of uterine inflammation. Most frequently the accession of the disease is marked by rigors, partial or general, sometimes so slight as scarcely to be perceived by the patient, at other times so violent as to produce strong succussions of the whole body. The cold shivering after a longer or shorter duration passes away, and is succeeded by great heat of the surface, acceleration of the pulse and of the respiration, thirst, sometimes nausea, and vomiting, and intense pain across the forehead. The rigors precede, accompany, or follow the increased sensibility of the *uterus*. In some of the most severe cases, there has been no distinct rigor, but a quick pulse, hot skin, and hurried respiration, have rapidly succeeded to the uterine pain. In some of the most unfavourable cases, the extremities have been cold, and the countenance anxious and pallid, after the disease has been completely formed.

" There is no uniformity in the state of the tongue in puerperal *peritonitis*. It is sometimes covered with a thin, moist, white, or cream-like film, at other times it is red in the centre, with a thick, yellow, or white fur on the edges.

The *lochia* are often completely suppressed, in other cases only diminished in quantity. The *mammæ* usually become flaccid, yet in some fatal cases, the milk has been secreted till a short period before death.

" Puerperal *peritonitis* may be confounded with the irregular contractions of the uterus, which constitute after pains and *hysteralgia*, and it must be admitted that in some cases it is difficult to draw a line of distinction between them. Where the pulse is accelerated, the remissions of pain incomplete, the *lochia* scanty or suppressed, in a large proportion of cases we shall arrive at a correct diagnosis by considering the peritoneal coat of the *uterus*, or its deeper seated tissues in a state of congestion or inflammation, and employing antiphlogistic treatment. There are few puerperal women, except those of a feeble and irritable constitution, or who have been previously exhausted by hemorrhage, or some chronic disease, who are seriously injured by cautious depletion, local or general; and where death has followed the abstraction of sixteen or twenty ounces of blood from the arm, the fatal result may fairly be attributed to the disease, and to the neglect of the remedy rather than to its abuse.

" Intestinal irritation, depending on a disordered state of the bowels, is also liable to be mistaken for *peritonitis,* and treated by blood-letting to the injury of the patient. In this affection the abdominal pain is diffused, it is rather a griping than acute pain: it does not commence in the region of the *uterus,* nor is it aggravated by pressure. The abdomen is generally soft, puffy, and distended. The tongue is loaded. There is thirst and headach, the *lochia* and milk are not suppressed, the febrile attack is usually preceded by evident signs of great intestinal derangement, flatulence, nausea, vomiting, constipation or *diarrhœa.* The constitutional disturbance attending intestinal irritation, comes on about the end of the first week, whereas *peritonitis* manifests itself most frequently before the fourth day subsequent to delivery. The reaction which succeeds to uterine hemorrhage cannot easily be confounded with puerperal *peritonitis.* The morbid sensibility of the *uterus,* which characterizes inflammation, and the other symptoms already described are here entirely wanting."—Pp. 383-387.

2. *Inflammation of the uterine appendages, viz. the ovaries, Fallopian tubes, and broad ligaments,* is so general, that in one case only, in which the uterine *peritoneum* was inflamed, did Dr Lee find them free from disease; and conversely, in many cases in which the *peritoneum* was slightly affected, the uterine appendages were involved in extensive disorganization. There is, indeed, no doubt that injury of the ovaries, or the texture connecting them with the Fallopian tubes, is by far the most frequent morbid change in the bodies of puerperal females; and in the puerperal disease which occurred here several years ago, in seven fatal cases which we had occasion to inspect, or to see inspected, the peritoneal investment of these organs was covered with lymph in greater or less quantity, and the subserous cellular tissue, connecting the *peritoneum* to the ovaries, was reddened, injected, or of a brown colour, and softened or infiltrated with purulent matter.

In the cases inspected by Dr Lee, the *peritoneum* forming the surface of the broad ligaments, ovaries, and Fallopian tubes, was red, vascular, and partially or completely imbedded in lymph or purulent fluid. The loose (the fimbriated) extremities of the Fallopian tubes were of a deep red colour and softened, and purulent fluid was deposited in circumscribed patches, or infiltrated diffusely in their subserous tissue, or in their interior. Serous or purulent fluid was in like manner infiltrated in the intermediate filamentous tissue of the broad ligaments.

The substance of the ovaries was in all the cases very much changed. The reddened and vascular state, or the lymphy deposits on the peritoneal investments, have been already noticed; and must be regarded as the most common, and perhaps the simplest form of the disease. In other cases, which must be regarded as more severe, their entire volume was enlarged and swelled, their substance red and pulpy, and their filamentous tissue infiltrated with extravasated blood; in others, the ovarian filamentous tissue has been infiltrated with purulent fluid, or converted into a more minute circumscribed abscess; in many, the vesicles of De Graaf have been reddened and enlarged, or distended with effused blood; and in several the entire substance of the ovaries has been reduced to a softened reddish vascular pulp, in which it was impossible to recognize any traces of their natural organization. Of most of these changes, in their different stages, Dr Lee exhibited drawings to the society.

In some instances even the destruction is not confined to these organs; but apparently in the attempt to effect progressive absorption of the surface the disease commits the most extensive ravages on the neighbouring organs. The following examples of this species of destruction may be given in the words of the author.

"The *ovarium* appeared in one instance which I observed to be converted into a large purulent cyst, which had contracted adhesions with the abdominal parietes and discharged its contents exteriorly through an ulcerated opening. In another case which proved fatal, the inflamed uterine appendages, agglutinated together by lymph, had contracted adhesions with the *peritoneum* at the brim of the pelvis, the inflammation had extended to the cellular membrane, exterior to the *peritoneum,* and had given rise to an extensive purulent deposit in the course of the *psoas* and *iliacus internus* muscles, as in lumbar abscess.

"In two other individuals who ultimately recovered, the purulent matter, formed in the situation of the *psoas* and *iliacus internus* muscles from inflammation of the uterine appendages, made its way through an opening at the upper part of the thigh. Contraction of the thigh on the trunk took place in both these cases, and continued for several months, but disappeared on the recovery of the patient. The *uterus* remains immoveably fixed to the right side of the *pelvis,* in a woman who six months ago had a severe attack of inflammation of the *peritoneum,* and uterine appendages of the same side a few days after delivery,

"Inflammation of the uterine appendages being generally combined with *peritonitis,* to a greater or less extent, it is often difficult to establish a diagnosis between these varieties of uterine inflammation. The pain is less acute than in *peritonitis,* and is principally situated in one or other of the iliac *fossæ,* extending from them to the loins, anus, and thighs. On pressure the morbid sensibility will be found chiefly to exist in the lateral parts of the hypogastrium. The constitutional symptoms at the onset of the attack do not materially differ from those which mark the accession of *peritonitis*, being often accompanied with strong febrile reaction, which passes speedily away, and is succeeded by prostration of strength, and the other appearances which characterize inflammation of the muscular and venous tissues of the *uterus*."—Pp. 388-390.

3. *Inflammation* of the proper substance of the womb, the *hysteritis* of nosologists, though not an unfrequent affection after delivery, is somewhat difficult to be distinguished, either in anatomical or symptomatic characters. The dark-coloured mucous layer with which the inner surface of the womb is usually coated after delivery has been mistaken, and described as an effect of gangrenous inflammation. It is merely a pseudo-morbid appearance, chiefly occasioned by the sero-sanguine discharge which oozes from the surface after the separation of the *placenta* and membranes. The uterine mucous membrane, when inflamed, becomes thickened, softened, pulpy, and easily detached like the mucous membrane of the stomach and intestines. In two cases Dr Lee found the internal uterine membrane soft, flocculent, and as pulpy as if it had been macerated; and in others, conjoined with this disorganization, the muscular or proper uterine substance was for a considerable depth, or nearly the whole thickness of the organ, of a dark purple, gray, or yellowish hue, and so softened as to give way by the slightest force. This disorganization of the uterine muscular tissue may, and usually does, exist without corresponding lesion of the *peritoneum;* but in some instances it is simply inflamed, and coated with lymph over the softened portion, in others it is discoloured, becoming yellow, red, or bluish-green, without albuminous exudation. In a few instances the *peritoneum* itself was softened, with little or no affection of the uterine substance. These changes may take place in any part of the womb,—the *fundus*, the body, or the *cervix*; but their most usual situation is the part to which the *placenta* has been attached, and which is then attenuated, and becomes pulpy.

In a few instances minute abscesses have been found in the uterine substance, that is, in the condensed filamentous tissue of the organ, without perceptible change in the surrounding substances; while in other cases every trace of muscular fibre was obliterated.

Whatever was known on the nature of this change was fully considered when treating of the researches of MM. Tonellé, Duplay, Dance, Luroth, and Danyau; and though Dr Lee had carefully studied what these gentlemen had written before his paper was finally given to the public, he finds it impossible to add to the light thrown by them on the subject, and merely infers that it must be the result of an inflammatory process, from the fact, that the result of inflammation in other muscular organs is softening and gangrene, from the symptoms to which it gives rise, and from its occurrence in conjunction with other varieties of uterine inflammation. There is certainly something peculiar in the proper tissue of the *uterus*, not altogether muscular, but in its singularly close, dense, and fibro-vascular texture, on which this peculiar change seems to depend. We must farther bear in mind, that it takes place only during or after great distension of the uterine walls, and great and extraordinary efforts at contraction, and when its interstitial substance is loaded with an unusual quantity of blood in numerous vessels of different sizes.

Inflammation of the uterine substance usually commences with pain of the *hypogastrium*, irregularity of the lochial discharge, and shivering, succeeded by heat and other symptoms of fever. The countenance is pale, and betrays anxiety and distress undefinable. Headach, with delirium, and other affections of the nervous system, supervene often in so intense a form, that occasionally the local uterine disease has been completely overlooked during life. Hot, dry, and occasionally sallow skin, foul brown tongue, rapid feeble pulse, hurried panting respiration, with great debility, are the usual accompaniments; and, though under certain circumstances the patient may linger to the 8th or 10th day, the disease is generally rapid in course, and terminates before the end of the 3d day.

The chief difficulty in distinguishing this affection from all others of the uterine system is the fact, that it is often conjoined with uterine *peritonitis* or *phlebitis*. In the least complicated cases, however, it may be observed as a rule, that the symptoms assume the leading characters of a congestive disease. Unluckily, however, none of the symptoms are pathognomonic; and it is only in a negative manner that the physician can conjecture the nature of the disorder with which he has to contend.

"Hence it will appear that the most attentive consideration of the phenomena will not lead us to any certain conclusion as to the nature of the affection, and as in many other diseases, we can only determine its precise character by the history of its origin and progress, and by the alterations of structure discovered after death. In all the cases of this affection which I have observed, the resources of nature and of art have proved equally unavailing in arresting its fatal course. The active inflammatory symptoms, which commonly manifest themselves at the commencement of the attack, pass speedily away, whatever plan of treatment be adopted, and are rapidly succeeded by symptoms of exhaustion. Where the disease is not complicated with inflammation of the *peritoneum*, the symptoms are not such as to indicate the necessity for the employment of venesection; and in one case where it was adopted freely the abstraction of the blood was followed by speedy death. In other cases, where the opposite plan of treatment was had recourse to, the fatal result seemed to be less speedy, though equally certain." —Pp. 405, 406,

Several circumstances in the history of this disease lead Dr Lee to join Professor Boer in thinking it probable that this disorder of the womb may occasionally take place during utero-gestation, as well as subsequent to delivery.

" A case of spontaneous rupture of the *uterus* came under my observation in July 1828, and on dissection, the posterior part of the *cervix* and body of the organ were found converted into a soft gelatinous pulp. Another case was related by Dr Merriman to this Society, on the 10th of March 1829, in which the same cause appeared to have given rise to a similar result; and here not only had the *parietes* of the *uterus* undergone this morbid softening, but the spleen, liver, and other *viscera* were found peculiarly soft in their texture, so that a finger could scarcely be put upon these parts without tearing them."—Pp. 406, 407.

4. On the subject of *uterine phlebitis*, Dr Lee has thought it superfluous to enter so minutely as in the other forms of uterine inflammation, since that subject has been so fully investigated by MM. Louis, Andral, Dance, Tonnellé, and Duplay; and he confines himself to some excellent observations on the history of the disease, and the circumstances under which it usually appears, illustrated by a series of well-marked cases and dissections. These observations we find it impossible to abridge; and we believe the only way of doing is to place them in the words of the author before our readers.

" In women who have enjoyed good health during pregnancy, and in whom the process of parturition has been easily accomplished, uterine *phlebitis* occasionally commences within twenty-four hours after delivery, with pain more or less acute in the region of the *uterus,* accompanied or followed by severe rigor, or a succession of rigors, suppression of the lochial discharge, acceleration of the pulse, *cephalalgia* or slight incoherence of ideas, with an insuperable sensation of general uneasiness, and sometimes by nausea and vomiting. These symptoms after a short duration are succeeded by increased heat of the body, tremors of the face and limbs, rapid feeble pulse, anxious and hurried respiration, great thirst, with brown dry tongue, and frequent vomiting of green-coloured matters. The sensorial functions usually become much affected, and there is a state of drowsy stupor or violent delirium and agitation, which terminate in exhaustion. The whole surface of the body not unfrequently assumes a peculiar sallow or deep yellow colour, the abdomen becomes swollen and tympanitic, and some of the remote organs of the body, the brain, heart, lungs, liver, and spleen, or the articulations and cellular membrane of the extremities suffer disorganization, from a rapid and destructive congestion, inflammation or gangrene.

"At other times, inflammation of the uterine veins commences at a later period after delivery than above-mentioned, and in a much more obscure and insidious form, without either pain or sense of uneasiness in the region of the uterus, or any other local symptom by which the affection can be recognized. The uterus may return to its usual reduced volume after delivery, the lochial discharge may continue to flow, and the inflammation and suppuration of the veins, which have caused the whole of the violent constitutional disturbance and destructive lesions in distant parts of the body, may be wholly overlooked during life. In several cases which I shall now relate, this occurred, and wine, opium, brandy, and sulphate of quinine, with other stimulants, were liberally administered by the medical attendants, to obviate the debility supposed to be caused by a specific fever, without any local affection of the uterine organs."—Pp. 414-416.

Uterine *phlebitis*, though dangerous, is not always a fatal malady; and that it often takes place in puerperal females where it is not suspected, and where it did not prove sufficient to extinguish life, Dr Lee infers from the fact, that in the spermatic and hypogastric veins of females advanced in life calcareous concretions and disorganizations of different kinds, which must have the consequences of attacks at remote periods, are frequently observed.

Phlebitis, it may be remarked, is rarely a spontaneous disease, and seldom takes place unless in consequence of wounds or some specific cause operating on the venous tissue. This position appears to be applicable in full force to uterine *phlebitis*, which, though not to be invariably traced to the orifices of the veins of the uterine surface, where the *placenta* was attached, is doubtless often the effect of the communication indirectly established between the venous system and the atmospheric air, in consequence of the detachment of the placenta after delivery. "The uterine veins," says Dr Lee, "are then placed in a condition analogous to that of the large veins of the extremities after amputation and extensive wounds, which condition experience has proved to be favourable to the production of inflammation; and inflammation being once excited in the vessels, may extend along the continuous membrane of the uterine *sinuses* to the spermatic or hypogastric veins, and thence into the *vena cava*, and its principal branches returning the blood from the lower extremities."

The *causes* of uterine inflammation are involved in obscurity. In some instances the disease is manifestly the result of the violence inflicted on the womb by severe, protracted, or instrumental labour, the forcible introduction of the hand, or the violent extraction of the *placenta*, or of exposure to cold, or irregularities in diet after parturition. Most frequently, however, it arises where none of these causes have been applied, and where no resource is left, but to refer it to some peculiar constitution of the atmosphere or to contagious principles.

In the early descriptions of the disease, regarded as child-bed fever, we find that it was generally believed as originating in some mismanagement in delivery, from suppression of the lochial discharge, and from errors in diet and regimen, rendered more locally efficient by the distended state of the womb, and the previous interruption of the menstrual secretion during pregnancy, and a depraved state of the blood. This at least appears to have been the opinion of RAYNALDE, SENNERT, LA RIVIERE, DE LE BOE, MAURICEAU, BOERHAAVE, STROTHER, DE LA MOTTE, BURTON, and COOPER. FELIX PLATER alone, by ascribing it to cold air rushing into the cavity of the womb after delivery, seems to look beyond these causes of disorder common to all puerperal females. In the year 1664, however, the disease appeared in the Hotel-Dieu at Paris, so generally and in such violence that PEU, who regarded it as a putrid epidemic, had little hesitation in ascribing its origin to temporary causes connected with the state of the atmosphere, and to the air of that hospital, which was then not the best ventilated in Europe, and which was vitiated in an unusual degree by the exhalations of numerous patients with wounds and sores in the ward immediately below that, in which the puerperal females were accommodated.*

It is probable that this disease recurred from time to time in the hospital of the French capital. But the next period at which it made much impression was in 1746, when Jussieu, Col de Villar and Fontaine, by whom it was witnessed, observed that the disease attacked only indigent women, and that it was neither so violent nor so general among those who lay in at their own homes, as among those who were delivered at the Hotel-Dieu, where scarcely one of twenty puerperal women recovered. In this epidemic, the anatomical characters of the disease were albuminous exudation on the uterine and intestinal *peritoneum*, copious effusion of sero-purulent or purulent fluid in the pelvic peritoneal cavity, bloody extravasation at the free apertures of the Fallopian tubes, and in several instances, suppurative disorganization of the ovaries. † In the spring of the year 1750, the disease made its appearance in the Hotel-Dieu of Lyons, and produced great havoc by sero-purulent effusion, as well as the affection of the uterine substance. M. Pouteau, to whom we are indebted for this transitory record, regarded it as an epidemic erysipelatous inflammation of the *peritoneum*, the fatality of which, he informs us, made him mourn for the sufferers whom he was unable to relieve. *

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* La Pratique des Accouchemens, Liv. II. Chap. I. p. 268. Paris, 1694.

† Histoire de l'Academie Royale des Sciences. 1746. 4to, p. 160.

In 1770, a puerperal epidemic appeared in the hospital of St Mark at Vienna, which was regarded as inflammatory, but was by no means successfully treated by blood-letting. Storck, it is said, by employing camphor,—a remedy confidently recommended by Pouteau, saved more than 40 women.

About the close of the year 1769, and the beginning of 1770, the disease appeared in the Westminster Lying-in Hospital, and in several private cases in that city. Its great prevalence in the months of January, February, and March 1770, and its fatality, led Dr Leake, by whom it was closely observed in this district of the Metropolis, to ascribe it to some epidemic constitution of the atmosphere. From 13th December 1768, to the 12th December 1769, 185 women had died in child-bed in the cities of London and Westminster; but between 12th December 1769, and the 11th December 1770, 270 women had died; and between the latter date, and the 10th of December 1771, 172 only;—demonstrating that nearly a third more had fallen victims to this disease in 1770, than in the previous or subsequent years. From being confined chiefly to the space between the middle of December 1770, and the end of March or middle of April 1771, Dr Leake inferred confidently that it was owing to a malignant or noxious constitution of the air. †

In 1775, it again recurred in the same hospital; and Dr Leake seems then to have thought it connected with some contagious principles; for he directed the beds to be taken down, the curtains and bed-clothes to be washed, the wards to be fumigated and white-washed, after which it disappeared entirely.

From the statements of Mr Charles White regarding other lying-in-hospitals in London, it appears that, in another hospital, the same year (1770) was distinguished for the prevalence of puerperal fever; but that in two others, not that year, but 1771, was the most unfavourable,—a discordance rather inconsistent with the idea of epidemical constitution. In Dublin, on the other hand, the worst year was 1768.

It appears, therefore, that the idea of contagion, if entertained at all, was so in a very indistinct form by Peu; and it appears not to have been countenanced at all by Jussieu, Pouteau, and the contemporary London physicians. Even in 1770, Leake appears not at all to have imbibed the notion, that the disease might be contagious; and is at much pains to show that the fever of 1770 was owing to atmospherical causes. After-

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* Melanges de Chirurgie, p. 180-182.

† Practical Observations, &c. p. 30 and 100, Vol. ii. London, 1781.

wards, however, when he had seen the epidemic of 1775, he had formed the idea of an acquired infection. *

About the same time, however, the opinion of contagion was decidedly opposed by Dr Hulme, who maintained that puerperal fever was no more contagious than pleurisy, nephritis, or any other inflammatory disorder.† The appearance of the disease in the Hotel-Dieu of Paris in 1774, with great severity, made M. Doulcet regard it as a disease depending on epidemic or atmospheric causes. At Vienna, where it appeared in 1776, and from that time, more or less, to 1780, Stoll and Fincke found it complicated with the predominant bilious constitution; but the former, under some misconception, too confidently denied its inflammatory character. About the close of 1786, and at the beginning of 1787, a puerperal epidemic, with a quotidian remittent, and occasionally intermittent type, appeared among the child-bearing women at Arzago in Lombardy, and continued till the middle of July, when it was succeeded by dysentery among the inhabitants at large. This circumstance seems sufficient to show that it was connected with some peculiar constitution of the atmosphere.

Mr Charles White of Manchester, who wrote in 1777, partly from observation, but chiefly from the descriptions of predecessors or contemporaries, adopted the idea that it was epidemic in certain seasons, and endemic in certain situations; that the morbid appearances found in the dead body were altogether consequences and effects of a malignant diathesis, and were by no means peculiar to this disease; that the traces of inflammation in the blood and elsewhere are all to be regarded as effects; and that the disease, being more frequent in cities than in the country, and more in hospitals than in private houses, must depend on the exposure of puerperal females to foul or vitiated air. He further, however, expresses his belief of the influence of accessory causes, such as the hot regimen, too long confinement, absorption of the *lochia*, and rude and improper management during parturition. ‡

Its prevalence in London in 1787 and 1788, led Dr Clark to infer, that though it is hardly possible to prove that it is not infectious, yet there is no doubt that it arises as an original disease in patients who have had no communication with those labouring under the disease. Its more frequent occurrence among hospital patients, also, than among women delivered at their own houses, which Dr Clark had occasion to observe, he ascribed to the peculiarly distressing circumstances in which most puerperal females are placed when they require admission into those institutions. Some verification of this, we must say, we have had occasion to witness in cases occurring in this city. Soon after Dr Clark published his observations, Dr Denman, partly from personal experience, partly from testimony, expressed confidently his opinion of its occasional contagious character. He regarded it as fully proved at that time, that puerperal fever, whether epidemic or sporadic, is often conveyed by midwives or nurses from one patient to another. *

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* "The child-bed fever, when produced by a distemperature of the air, like the epidemic dysentery or ulcerous sore throat, may at last become infectious; but when it only arises from such accidental causes as have already been enumerated, and which are confined to particular habits and constitutions, I believe it will then never communicate itself to a second person."—Section iii. Vol. ii. p. 147.

† A Treatise on the Puerperal Fever, &c. Lond. 1772.

‡ Treatise on the Management of Pregnant and Lying-in Women, &c. Lond. 1777. 2d Edit.

A new and different view of the malady was about the same time, (1787,) given by Mr Philip Pitt Walsh, who maintained that it was no other than "common infectious fever complicated with more or less extensive inflammation of the *peritoneum.*" This opinion he rested on the following facts, "1*st*, That the same infection produces both diseases; 2*d*, That puerperal fever only arises in crowded hospitals, and among the most indigent and uncleanly females; 3*d*, that in the Royal Infirmary of Edinburgh two attendants on the puerperal women were attacked with *synochus*, or common continued fever; that conversely, the two first females delivered in the Lying-in-ward were attacked with puerperal fever by the common infection introduced in the clothes of one of the patients; and, *lastly*, That the two diseases generally prevail as *epidemics* the same year." These arguments, which have been long ago refuted by the experience of all puerperal and febrile epidemics, it is unnecessary to consider minutely.

They were also ably opposed by Dr Gordon of Aberdeen, whose observation, however, led him to regard the disease as incontestibly contagious in that town between December 1789 and March 1792. That the disease was not owing to a noxious constitution of the atmosphere, he inferred from the fact, that if so, it must have attacked puerperal females promiscuously and indiscriminately, whereas he found it always prevailing in particular channels, among women delivered by particular midwives. He, in short, maintained, that it was always dependent on a principle equally communicable with the poison of small-pox or measles. He further remarked a coincidence or relation, which had previously occurred to Pouteau, and has since been verified by others, that puerperal fever is occasionally accompanied with

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* Introduction to Midwifery, Vol. ii. Chap. xix. London, 1788.

erysipelas among other persons, but which proves nothing for contagion.

In 1800, Dr Hull of Manchester, who had seen the disease in London in 1785, and compared it with the ordinary *peritonitis*, distinguished them respectively as *p. puerperalis*, and *p. conjunctiva*, from an idea that the former betrayed less of the albuminous and adhesive character than the latter, and denied entirely the contagious character of the disease. *

After this period, the notion of contagion seems either to have been tacitly abandoned, or at least not so forcibly impressed, until the year 1814, when the testimony of Dr Armstrong of Sunderland, who had observed most of the cases in the practice of one surgeon and his assistant, somewhat revived the opinion. By the concurrent testimony of a large body of rational and intelligent observers, the disease is now regarded as by no means necessarily or essentially contagious; and the observations of various physicians and accoucheurs would lead to the conclusion, that it is in general a disease dependent on certain atmospheric peculiarities. This, we have reason to know, is the opinion of the most experienced practitioners in this city; and the same opinion is entertained by the physicians of the Parisian hospitals. Thus Dugés, Baudelocque, and Tonnellé, all agree in regarding the disease as void of any contagious property; Gardien regards it as dependent on the same causes as those of fever or inflammation generally, but especially determined by the circumstances of pregnancy and parturition;† Ozanam, who carefully studied the disease under Locatelli in the St Catherine Hospital at Milan, views it as epidemic in certain seasons, but never alludes to contagion; and Maygrier considers contagion out of the question.‡ Capuron alone regards the disease as the endemic of hospitals, and by his peculiar, though vague and declamatory language, seems anxious to revive the forgotten ideas and exploded hypothesis of Walsh.‡ Without despising his opinion of the influence of an atmosphere, if saturated with *miasmata* and contagion, or the incapability of the organization of a pregnant female resisting the operation of adynamic and putrid fevers, we must say, that we fear the general tone of M. Capuron's observations little qualifies him for using the strong and decided language which he adopts.

The present author, while he admits the difficulty of reconciling the contradictory evidence adduced on this question, states with great diffidence, what his own experience has taught him on this topic. In many cases, he remarks, on the one hand, the disease has occurred in its most destructive form, where it was totally impossible to entertain the idea of contagion. In other instances, Dr Lee has observed facts which incline him to adopt the opinion, that the disease is sometimes communicable by contagion; but he admits that these cases are neither sufficiently numerous nor decisive to dispel all doubt. There appears, nevertheless, either in the atmospheric constitution, or some other of the non-naturals, something connecting puerperal fever and erysipelatous inflammation. That this is the fact, may be inferred not only from the original observation of Pouteau, confirmed by Gordon and others, but from some facts related by Dr Lee in the present paper. On the 16th March 1831, a practitioner residing in a populous parish in the outskirts of London, inspected the body of a woman who had died of uterine *peritonitis.* On the 17th, he safely delivered a patient who was attacked on the 19th with symptoms of uterine *phlebitis,* and died on the 22d. Two other patients, attended by the same gentleman, between the latter date and the 6th of April, were attacked by the virulent form of the same disease, and cut off. On the 20th March, he performed venesection on a robust young woman of 17, labouring under pleurisy; and on the 5th of April, after pain in the wound for two days, patches of erysipelatous redness appeared on the inner surface of the arm, and, with the usual severe constitutional disorder, spread rapidly, coalescing, into the arm-pit. These symptoms proceeded in an aggravated form, though without obvious indication of much affection of the vein, which, nevertheless, was suspected; and death took place on the 9th of April, ten days after the venesection. The wound of the median basilic vein was found open, and its cavity filled with purulent fluid; the coats of this vein and of the basilic, to their junction with the axillary, were thickened, so as to resemble the coats of an artery; the inner membrane was reddened and rough, but without deposition of lymph; and the orifices of the venous branches opening into the basilic were closed by firm clots of blood. The cellular tissue along the inner surface of the arm was unusually vascular, and infiltrated with serum. The latter appearance, it may be observed, was an indication of slight and incipient diffuse inflammation.

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* Traité des Accouchemens, Tom. iv. Paris, 1816.

† An essay on *Phlegmatia Dolens*, &c. Manchester, 1800.

‡ Traité des Maladies des Femmes, p. 538. Paris, 1817.

"With regard to the nature of this inflammation," says Dr Lee, "it is difficult to determine whether it be of a common or specific kind. It certainly arises where individuals are not exposed to the ordinary causes of inflammation, and it often reigns as an epidemic particularly in hospitals, and in this respect it resembles hospital gangrene, erysipelas, and other specific inflammatory diseases which are generally supposed to depend on a vitiated state of the atmosphere.

Like these diseases too, it ceases without any assignable cause perhaps for several years, and then reappears in the same establishments, and is attended with the same destructive consequences."—Pp. 441-442.

On the connection between puerperal uterine inflammation and erysipelas, the following observations deserve attention.

" In the autumn of 1829, a short time before the epidemic broke out in the British Lying-in Hospital which led to its being closed for several months, two children died of erysipelas. In one of these which I examined after death, there were inflammation and suppuration of most of the branches of the umbilical vein, and extensive *peritonitis*. Another fatal case occurred in the course of the epidemic, and on examining the abdomen I found the *peritoneum* extensively inflamed, with a copious effusion of sero-purulent fluid. A few days before the reappearance of the disease in the hospital in December last, an infant died of erysipelas of the external organs of generation and abdomen, and the same diseased state of the *peritoneum* was observed. Another infant was attacked with gangrenous erysipelas of the extremity of the right fore-finger on the 28th of December, whose mother had been cut off on the 24th by uterine *phlebitis*. Mr Blagden has related to me a similar case which occurred in his practice last summer. A midwife of the hospital had a severe attack of erysipelas of the face, a few days after attending in labour one of the fatal cases I have related of inflammation of the absorbent and uterine appendages. (18.) These are certainly remarkable coincidences, but they are not sufficient I conceive to establish the fact, that it is an erysipelatous inflammation which attacks the *uterus* subsequent to delivery.

" At the close of this paper, I have placed an abstract of the histories of 112 cases of uterine inflammation, by which it will be seen, that at one period the inflammation affects chiefly the peritoneal surface of the *uterus*, whilst at another it affects its deeper seated tissues, and in this respect it resembles some other inflammatory diseases of the internal organs, and particularly of the thoracic viscera, which assume an epidemic form.

" It may also be observed from an examination of this abstract, that in the course of a few days, in the same ward of the hospital, and in patients who were placed in contiguous beds during the prevalence of the epidemic, all the varieties of uterine inflammation which I have described, occurred in their most perfect forms. In some the local and constitutional symptoms were immediately subdued by general and topical blood-letting, but in other cases the symptoms were from the commencement such as to contraindicate the use of this remedy, and it was not had recourse to. Such cases usually terminated fatally in spite of local bleeding, and the exhibition of internal remedies, and on examination after death the veins, muscular structure, or appendages of the *uterus*, were found to be the textures most frequently inflamed.

" This fact, that at different seasons, different textures of the uterine organs are liable to be affected with inflammation, and in varying degrees of intensity, will enable us in some measure to reconcile the discordant opinions contained in the works of authors, both with respect to the symptoms of puerperal fever, and the treatment required in different epidemics."—Pp. 443-445.

Dr Lee then proceeds to consider the validity of that doctrine, so long and so strenuously upheld in this country, that puerperal fever is a specific disease, altogether different from *peritonitis*, and demonstrates, from the careful comparison of a large and irresistible body of evidence, that the hypothesis is at once unfounded, and altogether untenable. It is really full time for the abettors of this doctrine to abandon it to its fate; for between inconsistency in pathology and practice, and sophistical reasoning to reconcile contradictions, their arguments are the most impotent and inconclusive by which a falling cause was ever supported. Half the ingenuity which is expended in this hopeless task would teach the student and practitioner a consistent system of principles, which would give him confidence in the most difficult cases. Dr Lee has taken considerable pains to refute these errors, and to efface the unhappy impressions left by the writings of Dr J. Clarke, and the lectures of Dr Hamilton and the late Dr Gooch; and we are certain, that no one who peruses his reasonings with candour and impartiality will fail to be convinced. It is useless to speculate as to the reason why Dr Hamilton still defends this incongruous hypothesis; for there is no mode of explaining it, unless by believing that he never has inspected the body of a patient cut off by the disease,—an alternative which we hope is not the case. As to the reasoning of Dr Gooch, it is altogether sophistical, and merely shows how much ingenuity may be used to misrepresent and lead to an erroneous conclusion.

On this subject, or rather in connection with it, we have one remark to offer, to which we attach much importance. A considerable proportion of confusion, disorder, and discordance prevails among practical writers, on the distinctions which they make of the different forms or varieties of puerperal fever. Most seem to be agreed, of late years, that there are varieties; but on the number and characters of these we find no agreement whatever. We shall merely, in illustration, adduce the distinctions observed by modern authors. Thus Hulme, De la Roche, and Leake, regarded puerperal fever as an inflammatory disorder of the intestines, *omentum*, and mesentery. Denman regarded it as an inflammatory disease of the *omentum*, *peritoneum*, *uterus*, uterine appendages, and bladder; and Clarke, though viewing it as an epidemic specific fever, is obliged to admit that it is attended with inflammation of various abdominal organs. Peu, Tissot, White, and Alphonse-Leroy, look on it as a putrid, typhoid, or adynamic fever; Antony Petit and Selle think it a nervous or ataxic fever; Doulcet ascribes it to gastric disorder; and, lastly, Walter, Johnston, Forster, and Cruickshank, Baillie, Hull, and Hey, deem it a local inflammation of the *peritoneum*. M. Vigarous distinguishes five species;—1*st*, the *gastro-bilious*, marked by intense hypogastric pain; 2*d*, the *putrid bilious*, marked by great debility, small intermitting pulse, hypogastric swelling, with frequent pain and putrid symptoms; 3*d*, the *pituitous*, doubtful; 4*th*, the *phlogistic* or *uterine inflammation*, marked by great weight in the *pelvis*, hypogastric swelling, pain and hardness, and acute fever; and, 5*th*, *sporadic* puerperal fever, proceeding from mental emotion, distress, &c. Gardien, again, recognizes six varieties of the disease; the *angiotenic* or inflammatory; the *adeno-meningeal* or mucous; the *gastric* or bilious; the adynamic or putrid; the *ataxic* or nervous, and that complicated with affection of other organs. These varieties, M. Martin of the *Hopital de la Charité* at Lyons augments to seven, in the following manner; 1*st*, the *gastric*, the most frequent, often complicated with worms, with epigastric pain, headach, and full pulse; 2*d*, the intestinal, also complicated with worms, with *meteorismus*, *borborygmi*, and diarrhœa; 3*d*, the epidemic puerperal, assuming the character of the prevailing epidemic constitution; 4*th*, puerperal fever from retention of the *placenta*, first inflammatory, then adynamic or typhoid, with hard painful hypogastrium, small pulse, and faintness; 5*th*, adynamic or putrid puerperal fever succeeding the gastric variety; 6*th*, puerperal uterine inflammation, marked by fixed pain in the region of the womb, suppression of the *lochia*, hard pulse, redness of the margins of the tongue, dry skin, and porraceous vomiting; and lastly, puerperal fever, consequent on mental emotions, profuse hemorrhages, copious external suppurations or purulent deposits in the substance of organs, always terminating in ataxic or nervous symptoms. Lastly, Dr Samuel Cusack of Dublin distinguishes the disease into three forms;—the 1*st*, the genuine inflammatory, marked by acute abdominal pain and tenderness, quick hard pulse, and other symptoms of *synocha*; 2*d*, the low or typhoid, generally epidemic, and allied to erysipelas, typhous fever, and similar low disorders, with dull weight in the hypogastrium, and no tenderness, weak languid pulse, and a sense of great faintness; and 3*d*, a mixed form, partaking of the characters of both,—with abdominal tenderness, yet with the pulse neither so hard and incompressible as in the first, nor so weak as in the second variety.

Now, though several of the manifold distinctions of the three foreign authors are perhaps imaginary and nugatory, and originating in some error of diagnosis, these distinctions, with the discordance of opinion, show that the disease is not in all subjects and at all times exactly the same, and that at different times it assumes different characters, and impresses different observers with dissimilar ideas of its nature. We are satisfied, however, that much of the confusion and disorder are completely removed by the use of the anatomico-pathological distinctions introduced by Dr Lee. The uterine *peritonitis*, and the affection of the ovaries, Fallopian tubes, and ligaments of the present author, is the inflammatory affection of Hulme, Leake, and De La Roche, the angiotenic puerperal fever, the puerperal uterine inflammation of M. Martin, and the first or inflammatory form of Dr Cusack. The *hysteritis* or uterine inflammation of De Lee is the putrid, typhoid, or adynamic fever of Peu, Tissot, White, &c. with diffuse inflammation of the uterine *peritoneum*, the 4th, or phlogistic variety of M. Vigarous, the adeno-meningeal, and the adynamic of M. Gardien, and the puerperal uterine inflammation of M. Martin. And lastly, the complication of uterine *phlebitis* gives the disease the conjunction of typhoid and nervous symptoms remarked by Petit and Selle, and distinguished as the 4th variety of Gardien, and the adynamic of Martin.

On the subject of treatment, with which Dr Lee closes his Essay, it is not very necessary to dwell; because the pathological distinctions already established will serve as the best guide to the practitioner. For uterine *peritonitis* the antiphlogistic treatment must be put in force in all its energy, by blood-letting, general and local, followed by hot cataplasms, and conjoined with calomel and antimonial powder, and a purgative draught repeated if necessary. In a large proportion of cases Dr Lee finds one blood-letting enough; and in several, leeches with purgatives subdues the disease. Oil of turpentine he states to be ineffectual, and emetics inconvenient for the abdominal pain.

In inflammation of the uterine substance, Dr Lee finds blood-letting less applicable,—a few ounces from the arm being followed by rapid sinking. When the local pain is severe, leeches and warm fomentations are more appropriate; but the experience of the author has been unable to furnish him with a remedy which effectually controls inflammation of the deep-seated uterine textures. Mercury, so much recommended by the French, he has tried, and been disappointed. No other result, it may be remarked, could be expected from any remedy which has to contend with peritoneal inflammation, inflammation of the uterine substance, of the venous canals, and the absorbents, all conjoined.

We have given rather a minute and detailed view of the researches of Dr Lee, and their most obvious applications, because they cannot be too generally known, and because they constitute the first and only attempt in this country to explain the true causes which have perplexed and baffled practitioners in the management of this formidable disease. They may further be regarded as a sure proof that the author, who has already shown so much assiduity and talent in using the opportunities afforded by the great Institution to which he is attached, will continue to make his profession and the public benefit still more largely by his labours. These opportunities, by occupying so much time, seem in many cases to be the very cause of their being too much neglected; and the physician of a large hospital establishment, after many hours of conjoined mental and corporeal exertion, feels himself quite unfit for the duty of reasoning and meditating on his experience. To this we are happy to say the example of Dr Lee presents a remarkable contrast; and we trust he will proceed in the same laudable course, and in showing that he is determined to rival, if not to excel, the eminent men who have preceded him in the same charge.

ART. V.—*Lectures on Anatomy: Interspersed with Practical Remarks.* Vol. I. II. and III. By BRANSBY B. COOPER, F. R. S. Surgeon of Guy's Hospital, Lecturer on Anatomy, &c. &c. London, 1829, 1830, and 1831.

THIS work, the first volume of which was published in 1829, we have refrained from bringing under notice till as much of it was visible as might enable us to form a correct judgment of the whole. The completion of three volumes reminds us of our duty, and compels us to defer no longer the mention of their contents.

The work of Mr B. Cooper consists of a series of lectures on the structure of the human body, the uses of its different organs, and the derangements to which they are liable from injury, disease, or other causes. It is therefore not a treatise on strict anatomy only; but one which gives a view of the physiological, pathological, and surgical applications of that science. This is a departure from the genuine limits of pure anatomy, which is perhaps a little at variance with the true objects of a scientific work; but it is one which, under certain circumstances and limitations, and if skillfully made, is always of great utility to the pupil. Though the absolute rules of science assuredly demand that anatomy should be confined to the description of the mere figure, situation, relative position, and intimate structure of the several organs and classes of organs of which the human frame consists;—it cannot be denied that this bare enumeration of facts is dry, and often tedious and uninteresting to the uninitiated and not very enthusiastic beginner. Show him, however, the uses, the purposes, and the practical applications of this unconnected mass of particular facts; and his attention is awakened, his interest is excited, and he becomes as desirous to learn as the master is to teach. So completely is it a law of our constitution that, in all pursuits, an end or ends must direct the means; and that even the most zealous and disinterested can rarely be made to acquire knowledge without having some distinct idea of its practical applications. In this *cui bono* disposition, which is certainly in an especial manner the character of the English more than that of any continental nation, there is both good and evil. If, occasionally, objects of abstract science are disregarded, at least some selection is made, and attention is not thrown equally away on all subjects, whether trivial or unimportant, whether curious or useful.

By these feelings, chiefly, has Mr B. Cooper been guided in the composition of the present treatise, which, indeed, is to be regarded as a good and authentic abstract of his instructions in the anatomical theatre of Guy's Hospital. He tells us, indeed, that his object was to embody, with anatomical description, as much physiological, pathological, and surgical information as would render, in the first place, his work a useful guide to the student in teaching him the practical applications of anatomy, and induce him, in the second, to search for more full information in other works expressly devoted to those departments of medical science.

In this aim we are happy to say that Mr Cooper has been highly successful. With full and accurate anatomical descriptions, evidently derived from the objects, he combines a great variety of useful and interesting matter on the functions of particular organs, on the disorders to which they are liable, and on the operations required to restore them to their healthy action. In the accomplishment of this task, Mr Cooper has judiciously studied to observe a proper medium between excessive copiousness, and meagre and unsatisfactory or imperfect statements. In the anatomical department we find proper attention paid to the descriptions and views of the continental anatomists; and while local and relative anatomy is very fully and accurately delivered, as might be expected from a pupil of Sir Astley Cooper, and a surgeon to Guy's Hospital, we are happy to see that general anatomy and all the important facts recently given on the organization of the elementary tissues receive a due share of attention. There are no parts, however, of the work in which the anatomical information becomes so interesting as those in which Mr Cooper gives the results of the researches and views of Sir Astley. Much of the minute anatomy of several of the simple textures, as the bones, the skin, mucous membrane, &c. the account of the liver, the spleen, the pancreas, lungs, &c. and the whole of the description of the abdominal muscles and their mechanism, that of the parts concerned in *hernia*, the account of the genito-urinary organs in both sexes, and of the parts concerned in the operation of lithotomy,—are of this character. It would be quite endless, however, were we to enter into any detail and enumerate all the peculiar excellences of this division of the work.

In the physiological illustrations we acknowledge that we were somewhat afraid lest Mr Cooper should either fail to make the proper selection or give the best information. This apprehension, however, proved to be groundless; and we may safely say, that the present work furnishes all the physiological matter which the anatomical student requires; and while it does not overpower the attention with minute speculative discussions, it gives fair and just views of the present state of knowledge on the points most essential to be understood.

In his pathological observations we are happy to see so much useful matter brought before the student. The large and now valuable Museum of Guy's Hospital, as well as the surgical practice of that magnificent Institution, have manifestly been of great use to the author, who shows in this respect intimate knowledge of a branch of science useful in itself, and every day becoming more important in the eyes of every accomplished surgeon. It is further due to Mr Cooper to say, that in several particulars he rectifies mistakes committed by former pathologists, and modifies statements too generally and too confidently expressed. This itself is a proof of originality, and shows that the author has not been negligent in availing himself of the valuable opportunities which he enjoys.

In surgery, Mr Cooper, as may be expected, is in his own department. The anatomical history of injuries and surgical diseases is delivered in a clear and interesting manner, and cannot fail to impress correct views on the mind of the student. This character applies with particular force to the account of the various injuries and diseases of the bones and articulations in the first volume, which, illustrated as it is by a considerable number of figures, must be extremely useful in initiating the surgeon in the mysteries of his profession. The illustrations of operative surgery are not less valuable. After full exposition of the anatomical connections of the parts to be made the subject of operation, he explains, in a luminous and distinct manner, the successive steps of each operation, and apprises the reader of what he is to expect. On this topic, however, as one of secondary importance in the treatise, it is superfluous to dwell. It is sufficient to say, that, in the three volumes before us, the great object of anatomical instruction, for practical purposes, is steadily kept in view.

From this work we anticipate great advantages to the system of anatomical instruction in the London schools. With minute and elaborate attention to relative anatomy, and occasionally more to certain parts than others, our London friends very often neglected, or even despised, general anatomy, and occasionally betrayed inattention to the anatomical characters of parts not immediately useful in surgical practice. With them surgical anatomy was every thing, and medical anatomy was valued only as it ministered to the other. This unequal distribution we think the present work is admirably calculated to remove; and we confidently trust, that the students of the London schools will avail themselves of the valuable information contained in the present work. It is not the mere exact amount of actual knowledge which will be beneficial; but the general views of anatomy which are here communicated, the taste which it will doubtless inspire for enlarging and rectifying these views, and the philosophical spirit which it is calculated to give the practice of surgery,—all benefits which every one who wishes the diffusion of sound professional information must ardently desire, cannot fail to result from the perusal of such a work.

ART. VI.—*A Treatise on Deformities; exhibiting a concise view of the Nature and Treatment of the Principal Distortions and Contractions of the Limbs, Joints, and Spine. Illustrated with Plates and Wood-cuts.* By LIONEL J. BEALE, Surgeon. London, 1830. 8vo. Pp. 248.

THE remark of Mr Beale, that there is no work in the English language, and, he might have added, any other European language, which professes to treat generally of deformities, is perfectly just and well founded. Distortion of the spinal column is the great subject which attracts attention and awakens interest; and this, accordingly, has given rise to several excellent essays, most of which have been on different occasions noticed in this Journal. The spine, however, is only one part, though a very essential one, of the human frame; and though its derangements in figure, direction, and structure, acquire particular importance from their influence on one of the central portions of the nervous system, and their more or less intimate connection with the important organs of the chest and belly,—other portions of the osseous frame are liable to anomalies in shape and position; and these, while they impair symmetry by impeding locomotion, or rendering that function impossible, may exercise a serious influence on the general health.

The influence of personal deformity, even on the moral constitution of our frame, is so manifest and so considerable that it has not escaped superficial observation. It is a current and frequently repeated remark, that it is very often connected with extreme peevishness and ill humour, and that fretfulness, waywardness, and sometimes more frightful and stormy qualities, inhabit the breasts of those little favoured individuals. Though we are aware of several remarkable exceptions to this rule, it is, nevertheless, sufficiently general to show that there is more than an accidental connection between the two circumstances. The hideous character attributed by the genius of Shakespeare to the usurper Richard, might be in some respect the offspring of the imagination of the poet. But his deformity is matter of historical record; and notwithstanding the generous ingenuity and charitable sophistry with which Horace Walpole has laboured to efface the blemishes, and give him a character of decency, enough still remains to justify the general belief, and sanction the picture of the dramatist, that, mis-shapen as was his person, his mind was still more distorted by the over-ruling predominance of every vicious quality. All of us know what fretfulness and ill humour occasionally beset the mind of Pope, and what malignity sometimes embittered the virulence of his satire; and it was one of the failings of Byron, that, polished as he was, and habitually kind and generous, he nevertheless allowed himself to indulge in animosity and asperity against some individuals, so enduring and outrageous, that it seems almost to border on mental alienation. Is it, that, feeling themselves separated from the rest of mankind by an obvious character, they brood over their defects till the temper is soured and the moral sense obscured and perverted; or does this frame of mind originate from the same general cause as that which deforms the body or disfigures its members? These feelings may acquire greater force from the fact, that great delicacy of feeling, and a high degree of intellectual energy and acuteness, is in a large proportion of cases possessed by many of the deformed. Whatever be the nature of the connection, or its cause, it is the duty of the surgeon to study fully the origin of an infliction so mortifying to human weakness, and so subversive of comfort; to investigate the circumstances on which congenital deformities especially depend; and to discover whether we possess any means by which they may be corrected or alleviated, or by which, when acquired, their approach may be counteracted and opposed.

After an anatomical introduction, which we omit entirely, Mr Beale begins in the first chapter to illustrate the general history of deformities; and considers shortly the influence of excessive or defective muscular action, contractions from wounds or burns, particular attitudes and habits, and diseases of the bones or the articulations. In the second chapter, Mr Beale gives a very luminous and practical view of rickets as a source of deformity, in which he impresses the necessity of attending to the diet of children, and interdicting the use of those cates and delicacies, in which the mistaken and actually cruel tenderness of parents too often allows them to indulge.

The third chapter, which may be regarded as the commencement of the proper subject of the work, is devoted to *Contractions* of the upper extremity, which are considered under two heads, that of the elbow, and those of the wrist and fingers. Excluding disease of the articular extremities when it is incurable, *contraction* of the elbow-joint is represented by Mr Beale as the effect of a morbid condition of the *biceps flexor*, which he does not describe very precisely, but which we can collect from the remarks, consists of shortening of the muscle, and hardness and rigidity of the tendon. " When an attempt is made to extend the fore-arm, the tendon becomes more firm, and resists the motion. The *brachialis internus* will contribute to keep the arm in a state of flexion. The antagonist muscle, the *triceps*, will of course be in a state of inactivity." On the pathological cause of this species of deformity, Mr Beale gives us no information. From some analogous specimens which we have seen, we are inclined to consider it as the effect of a species of inflammation, affecting the *fascia bicipitalis*, which, though in some instances similar to diffuse inflammation of the filamentous tissue, in others cannot be traced to that cause. The remedy proposed is gradual extension by shampooing, friction, the local application of vapour, and the gradually extending apparatus of Mr Amesbury for stiff joint.

Contraction of the wrist and fingers is represented to depend generally, like club-foot, on congenital malformation, or unnatural disproportion in the power of the flexor and extensor muscles. " The former set," he informs us, " overpower the latter, are preternaturally contracted, and hold the hand in permanent flexion."—" The hand is useless, and wastes away. The carpal bones partake in the deformity, when it has been of long standing."

This hypothesis, however, is mere assertion on the part of Mr Beale, and may be right or otherwise without being necessarily so. He assigns no reason for this overpowering force of the flexor muscles, nor explains satisfactorily the cause of their preternatural and permanent contraction. Now, from some instances in which our attention has been rather forcibly attracted to the phenomenon in infants and children, we had come to the conclusion that it was not an overpowering force of the flexor muscles, but a loss of power, in other words, a local palsy, of certain of the extensor muscles. That this conclusion is the sound one, several reasons incline us to believe. In the first place, we cannot conceive, and do not know, any instance of this augmented or overpowering force assumed by Mr Beale; and if we could, we do not think it would be sufficiently great to neutralize that of the extensors. In the second place, all the flexors are naturally more powerful than the extensors, and habitually carry the bones of any member in the direction of flexion; in other words, the extensors are weaker than the flexors, and require a constant effort to keep the limb extended. In the third place, though we do not entirely question the statement of Mr Beale, that this disease is congenital, which, indeed, is a matter of indifference, we beg to remark, that we have seen it come on after affections of the nervous system, or diseases in which at least the nervous system was prominently affected; and in some instances, if taken in time, we have seen it recede under remedies directed to this part of the economy. In most cases, it will be found on inquiry, that it has supervened on some long and serious disorder occurring in infancy, and either neglected or misunderstood. Fourthly, we have witnessed a similar affection in adults after febrile disorders, in which the nervous system was much affected. And in the fifth place, if any attempt be made to extend the member, it is forcibly retracted by the flexors.

From these several considerations, therefore, we have been inclined to regard the contraction now under notice, as dependent on palsy of the extensors, rather than excessive force of the flexors. On the exact nature of this palsy we are unwilling to speak with confidence, having unfortunately, or perhaps fortunately, never had occasion to dissect the nerves of the extensors of a subject that we positively knew laboured under the disease. From the anatomical fact, however, that the nerves going to the extensors are invariably smaller, and perhaps less numerous, than those going to the flexors, we infer that they are under a less degree the nervous energy, and that, consequently, this nervous energy being more readily impaired under any cause affecting the nervous system, the extensor muscles are more easily deprived of power than the flexors, which, hence, not being duly antagonized, operate in producing permanent flexion.

Although we thus account for the origin of many of the cases of contraction, we do not pretend to say that all depend on the causes now specified. It will be for Mr Beale to consider the objections we have now stated, and the explanation given, and to distinguish to what extent they may be well founded or not. We willingly admit that, in cases in which the carpal bones are irregular or malformed, there is every reason to believe that the deformity is congenital.

Besides the obvious contractions from wounds and bruises, Mr Beale mentions also a variety of contractions of the fingers from constant handling of hard tools; in which he states the palmar *fascia* is much condensed and contracted. He admits, nevertheless, that instances of this affection are observed in persons in whom it could not have been produced by hard labour. "In an instance which I met with lately, the ring-finger of the left hand gradually but slowly contracted; and was followed in the course of a few years by the middle and little fingers of the same hand. After some farther time, the ring-finger of the other hand contracted, and the others followed the same course. The fore-fingers are beginning to share the same fate. Upwards of 20 years have elapsed from the commencement of this malady, which I am not acquainted with any means of curing. In the cases above alluded to, several of the most eminent surgeons of this metropolis were consulted; but they failed in suggesting anything that was of the slightest service."

We may add, that we have seen an instance in which the whole fingers of one hand were permanently incurvated, and could not be extended without producing the most acute suffering in the palm of the hand; in which it was not difficult to perceive that the palmar *fascia* had been previously affected with chronic inflammation of a severe and obstinate character. All means of restoration recommended by the surgeons of the Infirmary of this city were ineffectual.

Among deformities of the lower extremities, considered in the fourth chapter, the first, *inequality* in their length, Mr Beale represents when congenital, to depend on original inequality of developement, and, whether original or acquired, to be injurious in producing distortion of the spine and other deformities. Another variety of a paralytic nature takes place after birth, as a consequence of deranged nutrition or teething. Exercise, good air, and attention to the digestive organs by medicine, diet, and the cold bath, are the chief remedies.

Of deformities from malformation of the hip-joint, Mr Beale distinguishes two varieties, the one in which the head of the femur is either wanting, or the neck is wanting and the head depressed; the other, in which the head of the *femur*, as in the account of Cruveilhier, is transferred from the *acetabulum* to the external iliac *fossa*, —a congenital dislocation; with shortening of the limb, elevation and projection of the *trochanter*, and rotation of the limb and toes inwards, with eversion of the heel. "When a person having this conformation of the hip-joint is disposed to walk, he rises on the points of his feet, inclines the upper part of the trunk towards the member which is to support the weight of the body, elevates the opposite foot from the ground, and painfully transports his weight from one side to the other. Every time that this effort is made, the head of that *femur,* which receives the weight of the body, is distinctly seen to rise on the external iliac *fossa,* the *pelvis* to sink, and all the signs of displacement to become more apparent on this side, while they sensibly diminish on the other, until this in its turn receives the weight of the body."

" In the recumbent position the deformity in great measure disappears, the weight of the body no longer bearing down the *pelvis.* In this position we may by extension lengthen the limbs from two to three inches without inducing pain.

" The diagnosis of this affection is important, because it has been confounded with disease of the hip-joint. Dupuytren states, that he has met with individuals having this malformation, who had been confined for years to the horizontal position, and had undergone repeated applications of leeches, blisters, cauteries, and moxas, without the slightest benefit. The absence of pain, swelling, abscess, or cicatrix ; the simultaneous existence of deformity on both sides ; the appearance of this vicious formation from the earliest attempt at motion ; the progressive developement of the deformity as the weight of the upper part of the body increases,—are the characters which should enable us to distinguish this affection from one so different in origin, nature, and treatment."

This deformity rarely attracts notice till the period for walking arrives, when it is discovered that the infant cannot stand without difficulty ; and even this may be overlooked or ascribed to weakness or some such vague or uncertain cause. At the age of 3 or 4, however, when the rest of the body acquires weight and strength, it can no longer be mistaken, and the true nature of the defect progressively becomes more manifest.

Dissection shows, that in some instances nature attempts to supply the defect by the formation of a new but imperfect *acetabulum*, situate behind and above the true one. It is ascribed with some probability by Dupuytren to luxation *in utero ;* but it must be observed that this displacement could scarcely take place without the interposition of some adequate cause ; and of this no satisfactory account has yet been given.

Of distortions of the knee, the internal twist vulgarly denominated *in-knee* or *knock-knee* is the most remarkable. In a slight degree it is common to many young growing persons, and gradually yields, unless favoured by bad habit, to the modelling and divellent powers of the extensor muscles. In extreme cases, however, it is almost invariably combined, Mr Beale remarks, with some torsion or malformation of the bones of the leg and ankle-joint. On the anatomical characters of this torsion, however, we do not perceive that the author has formed very distinct ideas. "The natural inclination of the leg outwards," he tells us, "from the axis of the thigh, is greatly exaggerated; a considerable angle is formed between the thigh and leg; the knees are so approximated, that when the patient stands he cannot place them side by side, but is obliged to carry one behind the other; and some degree of twist is usually added to this deformity, the *patella*, instead of looking directly forwards, having more or less of an outward aspect, which increases the outward direction of the toes."

Of this deformity we have been led to remark two varieties, which are perhaps only different degrees of the same. In the one the *tibia* and *fibula* are moderately straight, but so much turned round that the muscular part of the leg, instead of being behind, and equally distributed on the fibular and tibial side of the member, is altogether thrown to the tibial or inner side of the limb. The tibial or internal ankle in that case, instead of being in a line with the inner femoral condyle and tuberosity of the *tibia*, is considerably on its outward side. In the other case the spine of the *tibia* is arched anteriorly, its inner anterior plane is extremely convex, and the whole bone is preternaturally twisted; the anterior angle of the *fibula* is in like manner arched; and the whole direction of both bones becomes so contorted, as to be convex on the tibial and concave on the fibular side in various degrees. Thus, in a *tibia*, of which the length is 15 inches and $\frac{3}{4}$ths, obtained from the body of a man known to have this deformity, and preserved by us, not on this account exclusively, the whole direction of the bone is arched convexly before and concave behind; the spine, instead of forming a line nearly straight, forms a curvilinear arch with the convexity anterior, and below the middle of the bone a deviation towards the fibular side of about half an inch; the inner surface also is considerably more convex than natural, while the outer or fibular surface is in the same degree concave; and lastly, the posterior surface is so much more concave and arched than it ought to be, that when placed resting on its two extremities on the table, along with another *tibia* of regular figure, and of the same length, while the greatest elevation of the latter is one inch, measured on the inner surface, the elevation or spring of the latter amounts to the extent of one inch and a-half. It is also to be remarked, in reference to this difference, that the deformed *tibia* is much thicker, and belongs to a subject more robust and more advanced in life than the symmetrical one. These peculiarities are represented in the annexed figures.

In another example of this species of deformity much more marked, but the subject of which is in life, the *tibia* and *fibula* are remarkably incurvated, so as to form a genuine bend with the convexity on the tibial side, and the concavity on the fibular; corresponding anterior arching has taken place; and the individual walks, as most persons with this deformity do, on the inside, not the sole of the foot, which is everted a considerable space to the fibular side. In extreme cases of this kind, therefore, the *tibia* and *fibula* are contorted in an extreme degree, so as to form a remarkable curvature, of which the convexity is directed inwards; and while the inner *malleolus* is large and prominent, it is set farther on the inner side of the *astragalus* than in the natural and symmetrical position of that bone it ought to be, and the sole of the foot is everted. Both varieties, we are satisfied, are connected with the rachitic *diathesis.*

Fig. 1.

Front view of the crest or spine of the Tibia.

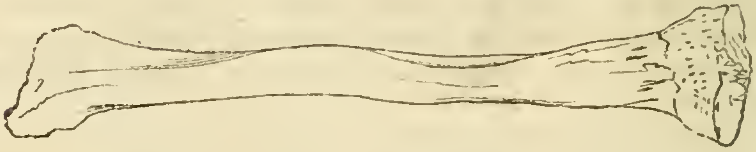
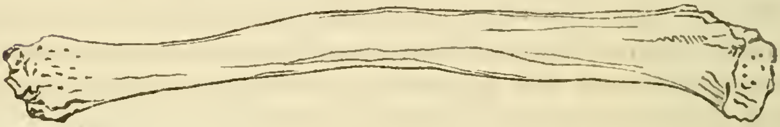


Fig. 2.

Lateral view of the Tibia, showing the arched bend.



In slight cases of knock-knee, Mr Beale recommends the use of a shoe with the internal margin of the sole unusually thick. In bad cases, he recommends the employment of the usual apparatus,—steel splints with joints and springs. It may be doubted, nevertheless, whether they are of any real benefit. In the cases in which we have seen them tried, we think all the benefit which resulted was the natural efforts of the parts to restore themselves.

On another species of malformation extremely important in a medico-military light, we find no information in the present volume; nor indeed is the subject mentioned. We allude to the peculiar deformity, or rather disability, denominated *flat-foot* or *splay-foot*,—a defect, the possession of which exercises so much influence on the gait of the individual as to render him unfit for the public service as a soldier. On this point, so little attended to, we find the only precise information we know is what is contained in the volume recently published by Mr Marshall, Deputy-Inspector of Hospitals, and to which, therefore, we think the attention of our readers may be advantageously directed.

" Flatness of the soles of the feet, (splay-footed,) is the most common malformation which occurs in the inferior extremities. This deformity is found in every possible degree, consequently there are many states of the deviation from symmetry which do not disqualify a man for military duty. Men who have the soles of the feet not merely flat, but in some degree convex, are ineligible as recruits; they are unable to walk gracefully, or to undergo the fatigue of long marches with equal ease as men with well-formed feet. Great care should, however, be taken not to confound broad but sufficiently well-arched feet with the deformity in question.

" The arch of the foot is admirably adapted for saving the body from shocks by the elasticity of the supports, and for grasping the inequalities of the ground in standing or walking. The heels and the balls of the toes are the two extremes of the elastic arch, and the leg rests on the arch between them. In the action of walking the heel is raised, and the body supported by the muscles of the calf of the leg; the foot bends in some degree, and the weight of the body rests for some time on the toes. At each step the ankle and knee-joint is gently flexed, by which means the limb is made shorter or longer as is required in different parts of the step, and the body is carried forward nearly perpendicularly.

" But when the sole of the foot is convex, the functions of the inferior extremities are greatly impaired. The weight of the body rests upon the centre of the sole, nearly in a line with the leg, and hence a mis-shapen foot of this kind is in some degree as inapt for graceful or easy motion as a wooden leg. Owing to there being no arch, there is very little elasticity of the foot, and the motion of the ankle and knee-joints are greatly diminished. In the action of walking the leg remains nearly of the same length, consequently the body describes at each step a portion of a circle, of which the middle of the sole of the foot is the centre. On this account the body is constantly rising and falling, and moving from side to side. "—Marshall on the Enlisting, the Discharging, and the Pensioning of Soldiers, Pp. 23, 24.

In the appendix also to the same work, we find some observations on the same subject by Staff-Surgeon Görcke, Director-General of the Medical Department of the Prussian army. The object of these observations appears to be to explain the anatomical characters of this disability, and to distinguish it from another deviation with which it is liable to be confounded; and, though rather vague and confused, they deserve to be more generally known than they seem to be. With this view, therefore, we subjoin these observations to the more pointed ones of Mr Marshall.

" In the examination of recruits mistakes are often made by confounding two different kinds of deformity of the feet, of which one is in common language termed *flat feet*, the other *broad feet*. Want of due discrimination in this respect gives rise to errors on the part of a medical officer who is directed to examine whether a recruit is fit for military service. The following observations will, it is hoped, obviate such mistakes in future. In the flat foot the bones of the leg are for the most part natural; there is, however, an irregularity in the manner in which the bones are placed on the foot, and in the relative position of their distant extremities with respect to the bones of the *tarsus*. The inner ankle is very prominent, and is placed lower than usual. A hollow exists below the outer ankle, of a greater or less extent, according to the degree of the deformity. The *dorsum*, or back of the foot, is not sufficiently arched; the foot is broader in the neighbourhood of the ankle than near to the toes. The inner side of the foot, which in a well-formed person is concave, is flat and sometimes convex. When a flat-foot is placed on the ground, the sole projects so much on the inside that the finger cannot be introduced below it. A person with flat feet usually walks with his knees bent, and assumes an attitude like a man when he pushes forward a wheel-barrow. He rests upon the inner side of the sole, and the usual degree of motion of the ankle joint is impeded.

" Flatness of the soles of the feet is almost never seen among the higher ranks of society, and very rarely among females. Children under ten years of age are seldom affected with this deformity. It is therefore possible that the disposition to flatness of the soles of the feet may exist in childhood, although the full developement of the deformity does not take place until the body is nearly fully grown.

" The remote cause of flatness of the soles of the feet is not satisfactorily known. Individuals who have this deformity in one foot only usually attribute it to an injury, as a sprain, &c.; and when both feet are affected, they commonly aver that they have had flat feet from childhood. Whatever notion we may entertain of the origin of the deformity, it has no other foundation but conjecture or analogy. There is no reason for supposing that the bones, or even the ligaments, are diseased in flat feet. In all probability the deformity consists in a sinking of the arch of the *os calcis*, and a corresponding displacement of the *astragalus*, whereby the inner surfaces of these bones become the inferior, and the exterior surface the superior. When a foot is remarkably flat, it is not unlikely that there is a subluxation of the anterior articular surface of the head of the *astragalus* from the posterior articular surface of the *os naviculare*, and an elongation of some of the ligaments which connect the bones. These circumstances would give rise to the appearances by which the deformity is distinguished, viz. the altered position of the *tibia* and *fibula*, the flattening of the back of the foot, the convexity of the inner margin of the foot, the treading on the inner border of the sole, the peculiar gait, which depends on an unnatural degree of motion between the *astragalus* and the *os naviculare*, the difficulty of moving the foot in consequence of a stretching of the ligaments.

" May not the deformity be owing to a displacement or flattening of the internal tubercle of the tuberosity of the *calcaneum*? Various causes may contribute to this effect, namely, a tardy ossification of the bones of the *tarsus*; infirm health, or a feeble constitution, scrofulous habit, &c. and the constantly increasing weight of the body. Flatness of the soles of the feet is particularly observable among the labouring classes of a community, which perhaps may in part be occasioned by a practice which especially prevails among the poor, namely, that of placing children very early upon their feet. Scrofula seems to contribute to flat feet, and perhaps in a great degree on account of the weight of the swelled bellies of children, a very frequent symptom in this disease. Females may be less liable to the deformity because boys are earlier employed in laborious occupations than girls.

" By a very moderate degree of attention, a flat foot may be easily distinguished from a broad foot. In the broad foot the bones of the leg are well placed upon the foot; the usual hollow exists under the inner portion of the sole; the back of the foot is arched, the foot is not disproportionately broad at the *tarsus*; the expansion of the foot commences with the bones of the *metatarsus*, and it is broadest near to the toes. Broad feet are usually more fleshy than flat feet.

" The function of walking is in no degree impeded by this slight deviation from the regular form of a foot, which consists simply in an extension of the lateral ligaments of the heads of the metatarsal bones, occasioned in all probability by much use of the feet. It will therefore appear that men with broad feet, in consequence of being much inured to walking, are particularly well adapted for active military duty, more especially in the infantry; while men with flat feet are totally unfit for the army. When the deformity is considerable, a man is incapable of marching easily, for the feet swell and the soles get chafed. A flat footed man wears his shoes on the inside, so that the shoe of a person who is thus deformed may be readily discriminated.

" The remote and proximate causes of this deformity are still but very imperfectly known, and it is therefore much to be wished that army medical officers would avail themselves of every opportunity which offers to investigate the subject. To do this effectually, deformed feet should not only be carefully inspected, but the parts of the foot ought to be examined after death. By this means we may be able to attain greater certainty in regard to the cause of the deformity, and perhaps to discover a rational plan of treatment."—Marshall on the Enlisting, the Discharging, and the Pensioning of Soldiers. Pp. 195,-198.

We pass over *contractions* of the knee and *curvature* of the bones of the leg, to the 5th section, in which the author treats of club-foot, of which, in imitation of Scarpa and others, he distinguishes three varieties, *varus*, or inward club-foot, *valgus*, or outward club-foot, and *pes equinus*, or the pointed toe, in which the foot is pointed downwards, and the patient walks on the toes.

Of these *varus*, the inverted club-foot, is by far the most common. Its anatomical characters, as given by Mr Beale, are as follow.

" The bones in this malformation are not, properly speaking, dislocated, but removed from their mutual contact, and twisted around their smaller axis. Writers on this subject have differed with regard to the particular tarsal bones, which are principally implicated in the distortion; the fact is, that there is much difference in this respect. In some instances, the *astragalus,* in others, the *naviculare,* are most displaced; but the four first bones, the *os calcis,* the *astragalus*, the *scaphoides*, and the *cuboides,* are those which alone suffer displacement in the majority of cases; but they are never entirely removed from their respective cavities. The essence of the deformity consists in the twisting of these bones around their smaller axis, the consequence of which is, that the cuneiform, the metatarsal bones, and those of the phalanges, are drawn into the same direction, and the toes, instead of being horizontal, are placed in a vertical position.

"The effect of this alteration among the bones, is that some of the muscles are shortened and some elongated: among the former are the *tibiales,* the *flexor longus,* the *soleus* and *gastrocnemius;* among the latter are the *peronei* muscles. The ligaments, which unite the tarsal bones together, and to the *tibia* and *fibula,* are found in a state of unequal tension, some being extremely rigid, while others are attenuated."—Pp. 98, 99.

The essential anatomical character of this distortion, in short, is represented to be the angle which the first range of tarsal bones forms with the second, the former being on the same line with the leg; the latter with the rest of the foot. The derangement, therefore, of the *phalanges*, of the metatarsal bones, and even of the three cuneiform bones, is limited to direction, and does not affect the figure. Of the tarsal bones, the scaphoid, according to Scarpa, suffers most; but the deviation in this case Cruveilhier regards as entirely consecutive. It is diminished in volume by reason of the compression to which it is subjected, and by the displacement of the *astragalus ;* its articular surface, with the navicular, being reduced to half or a quarter of its usual extent. The articular surfaces of the cuboid bone are in the same degree deranged.

The chief deviation, according to Cruveilhier, is observed in the *astragalus*, which is changed both in direction and in figure, exactly in a degree proportional to that of the club-foot. Its external articulating surface is directed downwards, the internal upwards; the superior articulating surface is partially or entirely destroyed; the head is reduced to ⅔ds at least; and a large part having abandoned the cavity of the scaphoid bone forms beneath the skin a tumour more or less conspicuous. In very bad cases, Mr Beale remarks, the weight of the body falls on this head, which then takes the place of the tuberosity of the *os calcis.*

Next to the *astragalus* in displacement is the *os calcis*, the external margin of which rests on the ground; while the posterior extremity, disfigured and diminished, is brought preternaturally close to the inner ankle, and the anterior surface quitting its union with the cuboid, forms beneath the skin a projection, on which the foot sometimes rests when walking. Some idea of these derangements in figure and position may be formed by two views of the bones of a club-foot given by the author in his second plate. The natural tendency is to *ankylosis*, which takes place generally about, or soon after, the period of puberty.

In the treatment of club-foot, which can only be attempted in early infancy, while the bones are still soft and within certain limits moveable, it is in all instances requisite to employ mechanical means; and the great point next to the early period at which these means are employed is to render their operation so slow, progressive, and steady, that the distortion may be remedied, as far as is practicable, without injury to the parts, and consequent pain to the patient. This purpose seems to be reasonably well kept in view by the conditions stated by Mr Beale in the employment of machinery. " 1*st*, To effect a gradual turning of the bones of the *tarsus, metatarsus,* and *phalanges,* in a direction opposite to that which constitutes the deformity, and to restore the fore part of the foot to its natural direction with the *tibia ; 2d,* to substitute for the deficiency of the external ligaments and the *peronaei* muscles, an artificial power capable, not only of balancing but overcoming that of the tense internal ligaments and shortened *tibiales* muscles, and causing the external margin of the foot to remain suspended on the ground ; and *3d,* when the equipoise of the muscles of the leg is restored, to promote, by means of the combined action of the two classes of muscles, the flexion of the foot or the *tibia,* so that after the tension of the *tendo Achillis* and *gastrocnemius* is overcome, the tuberosity of the *os calcis* may be depressed and brought into its proper direction with the sole, that the foot may acquire the aptitude of performing the motion of flexion and extension."

Mr Beale does not, nevertheless, adopt or recommend unconditionally the apparatus of Scarpa, which he thinks is chiefly calculated, 1*st*, for turning the foot outwards and in a proper direction with the *tibia*, and *2dly*, for correcting the direction of the heel and retaining the leg bones perpendicular to the *astragalus.* In some forms he admits that the simple contrivance of Dr Colles will be efficient; and others, he thinks, may require more powerful means than either.

Omitting the *valgus* as a species of deformity, on which nothing important is communicated, we proceed to the *pes equinus* or tip-toe, in which the ankle joint is stiff, the foot is firmly extended on the leg, and the patient supports himself on the toes. This species of deformity, which may be congenital or the result of accident, is not preceded by alteration in the bones; and its essential character is stated to be a shortening of the muscles of the calf of the leg, and consequent tension of their common tendon, which is rigid and hardened. The *plantaris*, *tibialis posticus*, and *peroneus longus* are also represented to be implicated, though not primarily, in this abbreviation.

Though we rather doubt the universal applicability of this view of the cause of the distortion, we are reluctant to state any very strong objections to it. We must observe, nevertheless, that the alleged curtailment of the muscles and rigidity of the tendon will not account for the stiffness of the ankle-joint; and that there is reason to believe that in several of these cases at least the ankle-joint is ankylosed, and the articulations of the tarsal bones are obliterated.

From the case of a man who died in the hospital at Strasburg, the author gives from M. Holtz the following description of the anatomical changes.

"The tarsal bones were all luxated but not altered in form, and there were great intervals between them on the upper surface of the foot. The *os calcis* was drawn upwards and directed outwards; the *tibia* reposed on the inferior surface of the *astragalus*; and the inner ankle was situate above the scaphoid bone. The insertions of the muscles were altered by the derangements of the bones, but they were not so completely degenerated as in the dissection of Cruveilhier."

Pigeon or Chicken Breast, (Chapter V.) consists of lateral compression of the *parietes*, with anterior projection of the *sternum* and costal cartilages, occasionally with central depression of the *sternum*. It is either congenital, or appears soon after birth in connection with the rachitic *diathesis*. Mr Beale, though he remarks the connection of this deformity with the disease of the *vertebræ*, does not, however, seem to advert to the circumstance, that the pigeon breast itself is an effect of previous deformity of the ribs, which, from defective solidity, are incapable of acquiring or retaining their natural curvature; and, being compressed laterally by the muscles, cause their anterior ends to project, and with them the cartilages and the *sternum*.

The treatment recommended consists in medicine to regulate the digestive organs, and impart tone to the system; regulated diet, exercise, friction, and pressure on the chest before and behind.

Wry-neck, *(Torticollis,)* is primarily seated in the muscles, especially the sterno-mastoid, which is said to be contracted congenitally, or curtailed and rendered rigid by inflammation, suppuration, &c. either spontaneous, or from injury, or from wounds or burns.

Mr Beale next proceeds, in chapters seventh and eighth, to the extensive and complicated subject of spinal distortions, and after considering in a general manner the influence of such causes as rickets, congenital inequality, muscular debility in the young and growing, contractions within the chest, and rheumatism, gives a view of the disease as it occurs in the three forms of *lateral curvature*, *anterior angular incurvation*, and *posterior flexure*, or what may be termed *recurvation.*

Lateral curvature, the most common form of the distortion, can neither be ascribed wholly to muscular weakness, or inequality in muscular action, nor to affection of the ligaments, nor to affection of the bones. In some respects attitude and habit contribute to its occurrence, as is shown, Mr Beale argues, by the example of the insane, who, remaining constantly in one position, often exhibit deviations in the direction of the spine. It is probable, nevertheless, he thinks, that in the state of health, no attitude or habit can have much influence ; and these must be conjoined with the strumous disposition, and some natural or acquired laxity of the ligaments and morbid state of the intervertebral cartilages.

" Anatomical investigations have ascertained that the bones are seldom diseased in lateral curvature. In those cases which originate in very early life, they are usually soft and spongy, and lose their shape by pressure, but in the most frequent instances of this variety of curvature, we may consider it as established, that the bones are never altered in structure, nor is their figure changed but in old, and permanent deformities. The muscles and ligaments, are found considerably altered both in form and texture : they are stretched and elongated on the convexity of the curves, while on the opposite sides they are contracted, as is also the skin. When the deformity has been of long continuance, the muscles are found wasted, pale or yellow, and flaccid. When the ribs have for many years been placed in close apposition, or ride one over the other, the intercostal muscles will be nearly obliterated, this will also be the case with other muscles, which have been totally inactive for many years. In some old cases, the tuberosity, the neck and head of some of the ribs have been found completely anchylosed with the transverse processes, the whole being enveloped in bony matter and confounded together.

" The fibro-cartilages are always reduced in thickness in the concavity of the curves. Mr Shaw states, that he never found them diseased, but that they always retained their peculiar firmness and elasticity : this is true with regard to lateral curvatures dependant principally on muscular debility. In cases resulting from the action of scrofula, or chronic inflammation of the intervertebral substance, it will be found softened and distended, its texture infiltrated with a gelatinous fluid, as the analogous structures are found in similar affections of the knee, or other articulations."—Pp. 149-150.

Anterior incurvation, a very frequent species of deformity, may be the consequence, according to Mr Beale, of rickets, of chronic inflammation of the fibro-cartilages, of disease of the bodies of the vertebræ, of muscular debility, of rheumatism, and of old age. Mr B. then enters into a minute and lengthened account of the changes, external and internal, chiefly in that variety which depend on disease of the vertebræ, which is certainly the most usual cause of this species of spinal deformity. Afterwards, he adverts to those varieties in which other causes are in operation, in the following terms.

> " Where the cause of the curvature has been muscular debility, or rheumatism, the fibro-cartilages are much compressed, their anterior margin is rendered very thin, and in some cases the cartilage is entirely removed. The weight of the body, causing the absorption of the cartilages before it operates on the bones, which, as the curvature increases, are rendered cuneiform.
>
> " The intervertebral substances have been found thickened and softened, their texture being infiltrated with a gelatinous fluid. The distended fibro-cartilage, forming a transverse ridge between the bodies of the vertebræ, and pressing on the spinal marrow, by protruding the posterior ligament into the canal."—P. 161.

Angular projection and *recurvation* receive little notice, and may be omitted.

In explaining the causes of these several forms of distortion, Mr Beale attaches considerable importance to deficient muscular action, disease of the fibro-cartilages, and relaxation of the ligaments, and thinks that the hypothesis of Dr Harrison on the latter subject has not received the attention to which it is entitled. In the present state of the inquiry, we believe that the greater part of our knowledge requires revision and rigid comparison with cases and dissections; but, as this must be the business of time, any neglect with which Dr Harrison's views have been treated, depend on the nature of the subject itself, which is still to be considered as under investigation. Mr Beale's consideration of the several causes from which spinal curvature may arise, shows that he is not entirely ignorant of the difficulties with which the inquiry is attended; and that it is impossible to ascribe curvature in all cases to the same invariable cause. It will only be when we have acquired, by the conjoined researches of many inquirers, exact information on the characters by which the different species of curvatures, as proceeding from different causes, are to be distinguished, that we shall be able to adapt any remedial and curative measures to the different forms of distortion, and rescue a branch of the art of healing from the indiscriminate treatment of empiricism, and the blind and random measures of ignorance. The observations of the present author on this subject deserve especial attention.

Art. VII.—1. *An Introduction to the Study of Human Anatomy.* By James Paxton, M. R. C. S. Hon. Mem. of the Ashmolean Society, and Author of the Notes and Illustrations of Paley's Natural Theology. *With Illustrations.* London, 1831. 8vo. Vol. i. p. 415.

2. *A Synopsis of the Bones, Ligaments, Muscles, and Blood-Vessels of the Human Body.* By William Sands Cox, Lecturer on Anatomy and Surgery at the School of Medicine in Birmingham. Birmingham, 1831. 12mo. Pp. 310.

THE first of these works is an excellent specimen of a species of publication which cannot fail to be exceedingly useful. An elementary work on anatomy, and anatomy alone, in which the author confines himself to clear, faithful, and precise description of the parts, illustrated by very excellent wood-cuts of the objects on the same page with the description, constitutes a text book so convenient that we think much praise is due to Mr Paxton for the undertaking. This plan of writing a treatise on anatomy was indeed originally pursued by Berenger, Vesalius, and some others; but Mr John Bell, and his brother, Sir Charles, are almost the only authors who have practised it recently; and both in the System of Anatomy of the two brothers, and the Principles of Surgery of the former, and the Operative Surgery of the latter, the anatomical details are illustrated and explained by small engraved figures on the same page.

Mr Paxton has satisfied himself with wood-cuts, which are executed with the neatness and taste for which this department of the graphic art is at present distinguished.

The present volume comprehends the anatomy of the bones, ligaments, muscles, and blood-vessels; and in the course of his description he has employed 280 figures, illustrating the disposition, configuration, and connection of the several parts. In the whole treatise Mr Paxton has, after the example of the foreign authors, adhered to strict anatomical description, and evidently observed the order, and imitated the brevity, clearness, and precision of Cloquet. These descriptions are rendered greatly more intelligible than they would otherwise be by means of the figures; and the beginner cannot fail to find his progress much facilitated by so agreeable a mode of procuring information.

In several instances, for example, the frontal, parietal, and occipital bones, the figures look as if they were copied from the distorted and careless, but often republished, ones of Sue. We would have wished them done either from the original objects, or from the lithographic engravings of Cloquet, which are almost the only ones which give just views of these objects. This objection we admit is trifling, and it should not be mentioned were it not almost the only thing which looks like a defect in the whole volume.

The compendious and well-stored little treatise of Mr Cox is evidently intended as a guide and companion to the students who attend his lectures. For this purpose it is well adapted. The author has, like Mr Paxton, confined himself exclusively to anatomical description; and by this he has rendered his account of the bones, ligaments, muscles, and blood-vessels, much shorter, more accurate, precise, and better arranged, than by pursuing an opposite method he could have hoped to do. With the precision, order, and accuracy of Soemmering, Bichat, and Meckel, Mr Cox has combined the distinctions and arrangements resulting from the new and ingenious views of Mr Bell and M. Magendie.

This work is in short a very creditable specimen of the zeal and assiduity of Mr Cox, and shows the excellent means of instruction with which all our provincial schools are now provided. The present little treatise would, twelve or fifteen years ago, have done credit to any of the metropolitan or academical establishments, and at present it may be as useful to the students there as in the populous and active town from which it has issued. Anatomy is the same science in the town and in the country, in the capital, and in the remote province.

Art. VIII.—*Maingault's Illustrations of the Different Amputations performed on the Human Body, represented by Plates designed after Nature; with Alterations and Practical Observations.* By William Sands Cox, Birmingham.

The Illustrations of Amputations, translated from the work of Maingault, with additions by Mr Cox, supply what has been considered a chasm in operative surgery,—the object of these plates being to assist the student in comprehending the various modes of performing these operations at the different parts of the extremities.

These plates represent the bony articulations of the hand and foot, and the various stumps, as they appear immediately after completing the separation of the part intended to be removed.

The author has given some preliminary general directions as to the performance and treatment of amputations. These are excellent. They relate to the previous arrangements,—preventing hemorrhage,—completing the incisions,—securing the vessels,—dressing the stump,—and the after treatment. They are judicious, short, and explicit. They may be advantageously perused and kept in remembrance both by old and young.

There are two points on which we make a few remarks. The first relates to the recommendation of the tourniquet, which we conceive is neither necessary nor expedient, unless a sufficient number of proper assistants are not at hand.

In the Royal Infirmary of Edinburgh, where we have witnessed the greater part of the amputations for many years past, we have not for several years seen a tourniquet applied ; neither have we seen any retractor to protect the muscles ; and no one could assert that operations could be better or more dexterously performed than these have been. In amputations with the tourniquet, which, by compressing the veins, invariably loads these vessels with an extraordinary quantity of blood, we have seen much more blood lost than we ever saw on any occasion by the simple compression of the main artery.

The circular incision, also, which is recommended in some of the operations in the work of Mr Cox, has long become quite obsolete in Edinburgh ; the many advantages of the flap amputation having become completely confirmed by experience.

The plates, which are the chief part of this work, do not quite, in our estimation, answer the purpose desired. They are intended to give the student a knowledge of the mode of amputating the different parts. But a representation of the operations completed, as these plates give, without the different stages being shown, and only accompanied with a very superficial and vague description, seems to us not sufficient for this purpose. The student would require to see how and where the knife is introduced, and the manner in which the incision is to be completed. To acquire precision and dexterity in operating, the student must study to become proficient in the anatomy of the parts,—to mark with attention the directions and operations of surgical teachers,—to operate on the dead body,—and witness the practice of an hospital. It is in vain, however, to think that any one can obtain by studying a few lithographic plates, advantages which can only be acquired by gradual, continued, and patient study, in the dissecting-room, surgical class, and public hospital. We doubt if the work before us will supply any one of these desiderata, though it is intended to supply the whole. As an auxiliary, however, to the means now recommended, it may be useful.

Art. IX.—*Lithotrity and Lithotomy compared; being an Analytical Examination of the present methods of treating Stone in the Bladder, with suggestions for rendering Lithotrity applicable to the Disease in almost all its Stages and Varieties, and remarks on the General Treatment of Gravel and Stone.* By Thomas King, M. D., M. R. C. S. &c. &c. London, 1832. 8vo. Pp. 320.

The present state of surgery, respecting the operations for the removal of stone in the bladder, renders the subject of this work extremely interesting. The object of the author of this treatise is to compare and weigh the comparative merits of the different operations of lithotomy and lithotrity.

The first part of the work contains a very minute and accurate description of the anatomy of the bladder and perineum, with exact measurements of its different apertures. Upon this description of the relative situation and measurement of the different parts of the pelvis, Mr King rests the great dangers which occur, and the objections which he has urged, to the common operations of lithotomy. We shall, therefore, quote, in his own words, the points upon which he has more particularly dwelt, and which we consider of greatest importance.

It is in the first place very properly shown that the bladder is a fixed, not a floating, viscus. " The bladder is fastened, at its neck, to the pelvis, nearly as strongly as tendons are to the bones into which they are inserted; and, in this respect, it differs materially from every other organ in the abdomen. Its anterior and inferior part is fixed by those strong fibrous fasciculi described by authors as the anterior ligaments of the bladder; by the triangular ligament of the urethra, which is continued along the membranous portion of the urethra with the capsule of the prostate gland; and, indeed, by the whole of the strong fascia of the pelvis. I do not mean to affirm that these parts are as strong as tendons, or ligaments: but they certainly yield as little without laceration or injury; and as this is one of the most important facts connected with the treatment of stone, I particularly solicit attention to it."—P. 30.

It is also particularly remarked that when the bladder rises, by distension, above the pubis, it carries the peritonæum along with it; so that " whenever the bladder rises fairly an inch and and a-half above the pubis, it is in contact with the peritonæum lining the wall of the abdomen, in addition to its own peritonæal covering. In other words, the shining surface of the peritonæal covering of the bladder is in contact with the same surface of the peritonæum lining the muscles of the abdomen: so that an instrument, to penetrate this part of the organ, must traverse the peritonæum twice."—P. 31.

The extent to which the peritonæum descends into the pelvis between the rectum and bladder is well described in the following passage:

"The middle part of this pouch advances within half an inch of the posterior margin of the prostate; whilst it recedes laterally, so as scarcely to cover the posterior extremities of the vesiculæ seminales. By this disposition, the most depending part of the peritonæal reflection represents a quick curve, its convexity being turned forwards, towards the prostate. The peritonæum is not constantly reflected at the same distance from the prostate; in some subjects it does not come within an inch and a quarter of it; in others it advances as far as its posterior margin. We see, then, that the inferior part of the anterior and lateral regions of the bladder, as well as the anterior part of its inferior region, have no serous coat or peritonæal covering."—P. 48.

The anatomical relations of the prostate gland next claim attention.

"The prostate forms about the two anterior fifths of this floor or inferior region of the bladder. It is of a triangular form, its base being turned backwards, its summit forwards. Its antero-posterior diameter is about one inch and an eighth; its base, measured across, has nearly the same extent. It is about three quarters of an inch thick; but the volume of the prostate varies almost as much as that of the spleen: in some subjects it has thrice the size here represented. It forms, as we have already stated, the bottom and a portion of the sides of the neck of the bladder, and joins it to the commencement of the urethra; its centre being slightly hollowed out for this purpose. Its internal surface is lined by the mucous membrane of the bladder, as it becomes continuous with that of the urethra; and, externally, it is intimately united to a layer of the fascia of the pelvis, which forms its capsule."—Pp. 52, 53.

It is of importance also to mark the exact situation of that portion of the urethra to which it is connected.

On this point Mr King remarks, "that the portion of the urethra between the anterior angle of the prostate and the anterior surface of the triangular ligament, a portion which never exceeds three quarters of an inch in length, is the fixed part of the canal; it lies under the arch of the pubis, one inch and a quarter below its symphysis, and is embraced by the opening in this ligament. This anatomists call the membranous portion."—P. 66.

Our readers do not require now to be informed of the practicability of introducing straight instruments along the urethra into the bladder. Upon this subject Mr King makes the following remarks: "It has long been a question in dispute whether the urethra is straight; and authors do not agree better about its direction; hence the difference of opinion respecting the form of catheters, and the variety of rules for introducing them. The urethra is, strictly speaking, a straight canal; that is, when detached from the penis and stretched in the direction of a line which would be a continuation of that of the inner surface of the basis or inferior region of the bladder. Now, although from its connexion with the penis it cannot in all individuals and at all times be made perfectly straight, the penis, which must be extended with it, not yielding sufficiently; yet, it may be drawn out so as to admit of the introduction of a straight instrument, which, when in the bladder in its natural position, will have precisely the direction of a line drawn from the inner surface or posterior edge of the trigonal space to the hole in the triangular ligament, and continued forwards. This line will be nearly parallel to the axis of the superior aperture of the pelvis. It is solely on account of the difference in length and elasticity between the urethra and penis that the canal can be better stretched in most cases, on a curved than on a straight catheter. But the curved instrument is not preferred merely for this reason: it has the advantage, when introduced into the bladder, of occupying its centre; whereas the end of the straight one cannot be carried from the bottom of the organ, without considerable pressure on the upper part of its neck, and on the lower part of the edge of the foramen in the triangular ligament.

" A straight sound, when an effort is made to direct its end towards the centre of the bladder, represents a lever, the fulcrum of which is the lower margin of the opening in the triangular ligament, the resistance, the upper or rather anterior wall of the neck of the bladder, and the power the hand of the operator.

" With a curved instrument the whole of the bladder may be explored; its summit may be reached without difficulty; this is quite impossible with a straight staff."—Pp. 44—46.

The inferior aperture of the pelvis is described as follows:

" The margin of the inferior aperture of the pelvis is formed superiorly and anteriorly by the symphysis pubis; laterally, by the branches of the ossa pubis and of the ischia; behind, by the summit of the coccyx; and on the sides, posteriorly, by the sacrosciatic ligaments and ischiatic tuberosities. The plane of the aperture is inclined forwards, as its axis indicates.

" The best mode of measuring the opening, and of appreciating its form and direction, is to remove the bladder, rectum, and all the soft parts of the perinæum and pelvis, except the obturators and pyriformes muscles, and their fasciæ. It will then be seen, that the distance from the bottom of the symphysis pubis to the tip of the coccyx, is about four inches and an eighth. The greatest transverse diameter is that taken from the back part of one tuber ischii, where the larger sacro-sciatic ligament is attached, to the same point of the opposite side; it passes immediately behind the anus and measures three inches.*

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* The direction in which a stone should be extracted by the pelvic outlet is indi-

"The extent of a line drawn across, along the inferior edge of the pubic ligament, from one side of the pubic arch to the other, is one inch and an eighth; lower down, opposite the posterior margin of the prostate, (and by opposite, I mean in a line intersecting another drawn parallel to the axis of the outlet, from this margin forwards,) the distance across, which has been tremendously over-rated, is only one inch and three quarters. Finally, the extent of a line drawn from one *ramus ischii* to the other immediately in front of the *anus*, is two inches and a half. This last line circumscribes what is generally called the *perinæum;* all that is posterior to it belonging to the region of the *anus.*

"The length of one side of the pubic arch, taken from the back part of the *tuber ischii* to the bottom of the *symphysis pubis*, is about three inches and a-half.—Pp. 74—76.

We have been thus particular in quoting from the part of Mr King's treatise which relates to the anatomy of the urinary apparatus, because it forms the basis of the subsequent discussions; and we do not hesitate to say that we consider it by far the most valuable part of the work.

The next part of the work gives a condensed account of the operations of lithotomy as generally practised. Regarding the common lateral operation, Mr King draws the following conclusions.

"Of the patients who submit to the lateral operation, one in seven or eight dies; and in almost all those cases which have a fatal issue, death is produced either by the force used to extract the calculus, or by too extensive an incision in the prostate. If the incision is small in comparison with the stone, death will follow from the violence done to the bladder and surrounding parts in the extraction; and if the incision is made sufficiently extensive to admit of the fair extraction of a stone one inch and a-half in each of its two lesser diameters, death will follow from infiltration of urine.

"In criticising the lateral operation, the first thing to be attended to is, then, the volume of the stone; success or failure depends upon it. If the foreign body never exceeded three inches in its lesser circumference, so that the incision in the prostate might be limited to three quarters of an inch or a few lines more, the operation, when well performed, would seldom or never be followed by fatal consequences. When it measures four inches and a half in its lesser circumference, or that the sum of its two lesser diameters amounts to three inches, the patient may recover, but the chances are very much against him; and when it exceeds this volume, death is almost sure to be the result of the operation.

"The surgeon is in this dilemma,—he must either use force, or

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cated by a line drawn from the incision in the prostate, towards the part of the *pelvis*, where this diameter is taken; but, as the prostate is turned forwards and near the bones, the extraneous body and blades of the forceps must first be made to revolve on an axis formed at the posterior extremity of the incision in this gland."

make a long incision; the former lacerates the prostate and cellular tissue, bruises the bladder and stretches its membranes, and shocks the nervous system; the latter prepares the way for infiltration of urine: both are fatal nearly to the same degree."—Pp. 104, 105.

The proofs of these conclusions adduced by Mr King are, 1*st*, that opposite to the prostate the space between the bones is only one inch and three quarters; 2*d*, the incision being made only on one side, the whole of this space is not available; 3*d*, that more than an inch and a-half will seldom be obtained by moderate pressure; 4*th*, the situation of the prostate, which, from its relation to the *rami* of the *ossa pubis*, and the fixed position of the prostate, preventing the escape of a stone above the size stated without tearing of the bladder or prostate, "and the effect of this laceration," says Mr King, "is almost certain death."

"The experienced surgeon," he adds, "will admit, that in one-half the number of cases which terminate fatally, death is the result of force used to extract the stone; and whoever peruses attentively the history of such cases detailed with the *post mortem* examinations, will come to the same conclusion."—P. 108.

Now, though we agree with Mr King in his positions to a certain measure, we do not feel prepared to accord with his views to their full extent. That there is greater danger in the extraction of a large calculus from the bladder after a certain size than from a small one, the operations of the most experienced lithotomists have completely established. But that the danger commences at the calculus, being about 1$\frac{1}{2}$ inch in 2 of its diameters, and above this always mortal, we are not prepared to admit; for the results of a great number of cases, and the exact measurements of the calculi, which the author has not supplied, would be necessary in order to establish this upon indubitable evidence. We have been enabled, by the permission of Mr Liston, to obtain the exact sizes of 20 calculi in his collection, all of them measuring more than an inch and a half in their two greater diameters, and most of them this size in their two lesser diameters also. These were extracted by the common lateral operation, and the results are as follow:—17 were cured, and 3 died,—1 of old abdominal disease on the 22d day after the operation,—1 of apoplexy,—the other by failure of the strength by long confinement several weeks after the operation. In the Anatomical Museum of this University there is a urinary calculus weighing 14 ounces, and measuring 3$\frac{7}{10}$ inches long, 3 broad, and 2$\frac{3}{10}$ in thickness, which was successfully extracted by the lateral operation. Mr Newbigging of this city, when one of the surgeons to the Royal Infirmary, also extracted a stone of nearly this size from the bladder with perfect success.

When an incision is made through the membranous portion of the *urethra*, and continued through a part of the prostate gland, an opening capable of very considerable dilatation is formed, and which, with very gentle force, permits the exit of much larger calculi than might *a priori* be supposed.

From these circumstances, we consider the few unfortunate cases brought forward by Mr King in proof of his sweeping assertion by no means satisfactory.

Recto-vesical and supra-pubal lithotomy are next commented on by the author, and the common objections to them set forth.

The author gives a pretty full account of the recently invented instruments and operations for lithotrity, as practised by Civiale and Heurteloup, which it is unnecessary for us to describe here.

The following are the reasons by which Mr King advocates the cause of lithotrity. " The great character by which lithotrity is distinguished from, and elevated above lithotomy, is, that it accords far better with the recurrent nature of calculous disorders. When once the kidneys have taken upon themselves to secrete gravel, it is difficult to put a lasting stop to the habit. Whatever means are adopted, there always remains a certain predisposition to resume an action that has before existed, and the slightest causes may occasion a relapse. If, then, the disease is liable to return, and to return frequently, it requires a remedy that can be repeated without the risk of life. Such is not lithotomy ; but approaching to such appears to be lithotrity. When a patient is cut for stone, the operation puts life in danger ; yet, it is no protection against a return of the disease : and, as often as it is repeated, so often does the patient risk his life. Lithotrity, on the contrary, does not endanger life. It can be repeated with safety, and applied with effect, at the first moment of a relapse ; it has also the great advantage, that the patient can contemplate it without the dread which lithotomy creates, not only in him, but even in the operator himself.

" It was a happy thought, that of reducing a stone in the bladder to a state which admits of its passing away with the urine. While in the form of gravel, urinary concretions are expelled by a natural process, in fact, by the exercise of the organs in which they are lodged ; nature has this resource, until they become too voluminous to escape through the *urethra ;* what, then, can be more rational than to restore to her this power, in making them reassume the form of gravel, by acting upon the morbid product, rather than by maiming a healthy organ ? We do not pretend, that, in the present state of lithotrity, the morbid production can be got rid of without great pain, and some injury to the organ containing it; but this is owing to the deficiency of our instruments, and not to any defect in the plan. Few operations, indeed, are so well founded as lithotrity ; and when once we possess instruments a little more perfect than those now in use, stone in the bladder will not be deemed a more serious disease than gravel."—Pp. 231—233.

He then takes into consideration, and endeavours to answer, the objections which have been urged against it. These are, 1*st*, The difficulty of seizing the stone; 2*d*, Liability to injure the bladder; 3*d*, Liability of the instruments to break in the bladder; 4*th*, The entanglement of one of the branches of the instrument in a hole made through the stone; 5*th*, Irritation of the bladder by the fragments into which the stone is broken; 6*th*, That a fragment may remain, and become the nucleus of another calculus. But these objections, we think, are not sufficient to prevent the operation from being practised. Upon this Mr King makes the following pointed remarks.

"The whole problem is, I know, to cure the disease in the bladder with the least possible pain and danger, in the quickest possible time. But since we cannot obtain equally these results, and must choose between time, pain, and safety on the one hand, and danger and promptness on the other, it is our duty to prefer security; time ought in all cases to be sacrificed to safety; safety to time, never. My wish is to apply this remark to all plans for curing stone; and I have no hesitation in saying, that, had I to choose between an instrument which would remove from a stone three grains daily, with perfect safety, and one that would destroy it in ten minutes with some danger, I should prefer the former. Time is not to be grudged, when it is to purchase with certainty and safety freedom from one of the most agonizing diseases. If we can once arrive at the means of destroying a stone at intervals, and by degrees, without danger or inconvenience, it matters little how often they are employed, or how trivial the effect of each application of them. Every grain removed is so much relief to the patient, who not only ceases to dread the operation, but actually hastens its repetition; he is in the state of mind of one, who, engaged in an arduous undertaking, derives from the satisfaction experienced at every successful step, fresh encouragement to proceed."—Pp. 240, 241.

In some special cases, however, lithotrity is certainly inapplicable, as, when the stone is very hard, large, or encysted,—where the prostate is enlarged, or strictures exist in the urethra. In children, also, it is not practicable.

The subsequent parts of the work now before us relate to some new proposals for the treatment of calculi of great magnitude or density,—the treatment of calculi in females,—and the general medical treatment of calculous disorders. Upon these we think it unnecessary at present to enlarge; but shall be glad to recur to them when Mr King has, by experience, proved the success of his proposals.

PART III.

MEDICAL INTELLIGENCE.

Historical Examination of the Epidemic Cholera at Paris; account of the different modes of Treatment employed against the different forms and periods of the Disease; and estimate of the results of these Methods. (Archives Générales de Médecine, April 1832.*)*—The numerous materials collected from all parts of Paris will doubtless furnish the means of tracing a general history of the epidemic cholera; and while we wait for the periods when we may undertake this task, we shall publish, in the meantime, a series of facts by which it may be facilitated. We begin with the

Hotel-Dieu.—The sanitary state of this large hospital always furnishes the exact standard of what is going on in the rest of the city. Its central position, and the neighbourhood of several populous districts, caused patients to flock thither before the prevalent disease was heard of at the other establishments.

Already, especially under the care of M. Petit, it had been observed that several persons were attacked with profuse diarrhœa and serous vomiting; and one or two cases of sporadic cholera had been observed, which had yielded to simple rational treatment, when, on the 26th March, a woman with the same symptoms, though in a more advanced stage, entered the St Paul Ward. The existence of cholera was admitted, without, however, regarding the case as of the epidemic species. The woman died four or five days after.

On the 27th March, 4 new cases, 2 men and 2 women, with the symptoms ascribed to Indian cholera, were brought in the evening. Assistance was promptly given; but a man and a woman died next day, and inspection left no doubt on the nature of the disorder. The remedies were external revellents and opiates; but reaction did not take place, and death speedily ensued. These cases were carefully recorded by M. Montault, pupil of M. Petit.

On the 28th, 9 men, labouring under intense cholera, were admitted. One died the same day, after being a few hours in the ward; 7 more died next day, and 1 only recovered. A woman entered the Hotel-Dieu the same day, about four in the afternoon, and expired before midnight. On opening a vein no blood could be obtained; the exhibition of punch produced no reaction; and, to use the language of M. Magendie, by whom she was treated, she was a *cadaverized* case,—a true type of that asphyxial variety afterwards met with. These first demonstrations indicated the severity of the disease; and two wards were assigned for the admission of patients that might forthwith be expected. This apprehension was very soon confirmed; and, next day, the 29th March, 23 new cases, 14 men and 9 females, were lying in the St Martine and St Monica Wards, under the care of MM. Magendie, Honoré, and Bally.

Of these 14 men, 8 died the same day, and the remaining 6 the day after. One of the 9 women died the same day. Most of these patients, it may be remarked, came from the district of the Hotel de Ville, from the street of La Mortellerie, from the city; some belonged to districts less insalubrious, as the Gate of St Denis, the street of Orleans St Honoré, &c. Dissemination was manifest, and consequently it was necessary to admit some other influence beside that which is concentrated in a confined and isolated locality.

On the 30th, 40 new cases were received; 10 died the same day, and almost all the rest the ensuing day. The same day (30th) at midnight, 78 cholera patients were lying in the Hotel-Dieu; and on the evening the following day, only 16 were in life, and expired in the course of the subsequent days. At this period, it must be observed, of 27 females only 19 died, while among 51 men there were 43 deaths. This alarming mortality depended not merely, as was asserted, on the uncertainty of the treatment; for most of the patients brought to the Hotel-Dieu presented the symptoms of the most virulent form of the disease. In vain did we attempt to produce reaction, and to warm them by every means suggested by reason and experience; the violet tint of the countenance and the limbs continued; the voice was irrecoverably gone; the breathing slow and deep; the eye dull, and the eyelids half open. The serous discharges continued to exhaust the patient, who was quickly cut off amidst acute suffering from the cramps, and unabated precordial anguish.

On the 31st, 50 new cases, 30 male and 20 female, were admitted; and it is remarkable that the proportion of admissions and mortality nearly observed this standard throughout. During these five days, therefore, the progress of the epidemic was rapid, and its commencement indicated a high degree of severity, and a wide extent of comprehension. Hitherto all the individuals attacked belonged to the working class, and they were generally middle-aged men, exhausted by labour and privations, badly fed and clothed, residing in unhealthy districts, neglecting every species of cleanliness, and guilty of frequent errors of diet. The majority had suffered before the first assault of the disease a diarrhœa of several days' duration, which had been neglected, or rather treated by wine, spirits, and other *stimuli*, resorted to by the common people in such cases.

The patients accommodated in the two wards already mentioned remained only two days under the care of the physicians specified. All the heads of the faculty being assembled, resolved that a certain number of beds should be allotted to each; and in consequence thereof nine physicians and three surgeons divided the 168 beds contained in the two wards, making to each 14, or 7 men and 7 women. These physicians and surgeons were MM. Petit, Recamier, Gueneau de Mussy, Husson, Magendie, Honoré, Bally, Gendrin, Caillard, Dupuytren, Breschet, Sanson.

Each head of the service had his internal pupil and his externals. The number of hospital attendants was augmented, but it was soon discovered that these measures, instead of alleviating and accelerating the duty, deranged its regularity. Very varied prescriptions, very different methods, measures executed at the same time or at different hours, produced a degree of confusion which caused much suffering to the patients, and which the zeal and intelligence of the most able assistants could not prevent. On the 3d of April, after which it became imperative to distribute the patients in all the wards situate on the left bank of the Seine, 388 patients had been treated in the wards of St Martine and St Monica, and next day 281 deaths were to be divided among the 12 physicians specified above. Some days after one-half at least of the residual 107 had expired, and 3 score only quitted the hospital recovered.

We shall afterwards consider the therapeutic methods observed; at present we must advert to the pathological principles on which the treatment was founded, and which were sought in the comparison of the symptoms with the necroscopic appearances.

The first inspections, performed with the minutest care, showed that the brain, the lungs, the liver, the spleen, and the other parenchymatous organs were not the seat of any arterial or venous bloody congestion, that there was not even cadaveric turgescence or mechanical *stasis*, and already the modification undergone by the blood was perceptible. Of this blood the chambers of the heart and the large vessels contained a certain quantity, though less than usual; but it was not in mass; there were no fibrinous clots in the aorta or pulmonary veins; it was blacker than the ordinary venous blood; its consistence was that of broken down currant-jelly, that is a species of pulp a little diffluent, but without trace of separation of the serum from the fibrine. The inner membrane of the vessels offered nothing indicating a morbid condition, and all the branches of the abdominal portal vein were empty,

On the other hand, the proper digestive apparatus, viz. the stomach and intestines, presented evident signs of active congestion. The gastro-enteric mucous membrane was injected of a rose colour, punctulated and sprinkled with arborescence of a bright red. There were many prominent patches of very distinct isolated follicles; and near the end of the *ileum* were all the anatomical characters of mucous inflammation of that portion of intestine. The whole tract of the intestine contained a large quantity of serous or sero-mucous fluid, tinged sometimes red, occasionally yellow, but most frequently turbid, whitish, depositing a flocculent pulverulent matter, as is done by a strong decoction of rice or an imperfectly strained emulsion. The large intestine appeared not unhealthy, and its contained fluid belonged to the *ileum*. The gall-bladder, without being distended, contained a blackish viscid fluid. The urinary bladder was uniformly empty, although the whole urinary apparatus betrayed no appreciable lesion. *Lastly*, the whole body was extremely rigid. The muscles formed through the skin bold reliefs, as in the most violent contractions. The fingers and toes were incurvated; the nails bluish; the countenance, pinched and contracted, retained the expression of suffering; and the eyes half-covered by the eyelids presented the lustreless stare already observed in life.

The cerebro-spinal apparatus was the object of researches still more strict if possible. The brain proper was firm, punctulated with black blood. The gray substance rose-coloured, but all natural. Neither the *cerebellum*, nor the annular protuberance, nor the spinal bulb, bore any trace of lesion. The serous fluid of the ventricles, and of the ex-serous cavity of the spinal chord showed nothing remarkable. The same may be said of the chief nervous trunks of the extremities.

Lastly, several great sympathetics were dissected in their entire course, and convincing proof was obtained that they presented no visible lesion.

These researches were made without preconceived idea, and with the laudable intention of forming an exact estimate of the organic lesions of the individuals who became victims to *cholera*. It was thought that proof was given of *active congestion* of the digestive apparatus,—congestion, by means of which was explained the enormous sero-mucous secretion forming the basis of the evacuations exhausting so rapidly the choleric subjects. This bloody concentration was believed to have the effect of speedily robbing the blood of a large proportion of its mass and constituent principles, since the residue was manifestly less than usual, and had lost the characters of healthy blood. The disturbance of innervation, in consequence of which these changes supervened, though maintained by a distinguished surgeon, is mere supposition; and not even an incipient proof or a plausible trace could be discovered in favour of this revived opinion, which must be regarded as a mere hypothesis.

We must therefore be satisfied with regarding as uniform a very active irritation of the small intestine, or a first degree of inflammation giving rise to peculiar phenomena. From this, consequently, was deduced the first rule of treatment, the object of which was to oppose this inflammation. We shall see, nevertheless, that, notwithstanding this opinion, the treatment adopted was far from being purely antiphlogistic.

On one hand, all the patients brought to the Hotel-Dieu by no means presented the same symptoms; and if, on the whole, they were attacked by the same disease, it was impossible for them all to be attacked in the same degree, or for the disease to assume exactly the same forms in all cases.

The first patients brought to the hospital were in a state of deep collapse, of general cold, with the circulation almost at a pause, the large arteries alone presenting feeble oscillations. The beats of the heart were scarcely heard; and the ear, applied to the chest, perceived only a dull sound, denoting that the ventricles did not expel the little blood they contained. These patients expired speedily, whatever efforts were made to warm them; and many thus died in 6, 8, 10, or 12 hours at most. With these patients the first and most urgent indication was to re-establish the circulation, to induce reaction in the sanguiferous and nervous system, and put a stop to that state of slow *asphyxia* which directly threatened life. In these circumstances, M. Magendie administered several glasses of spirituous punch, spoonfuls of hot spiced wine, frequently repeated, and of Malaga and other spirituous wines. These means were, however, very far from producing always the effect desired.

Patients, however, in whom the refrigerating period was less advanced, were also brought to the hospital; and these complained of acute pains in the epigastric region and in that of the heart, as if the lower part of the chest was the seat of a sense of weight, which embarrassed at once the motions of the stomach and those of the heart. In these patients the pulse was more distinct than in the preceding class, the cramps of the legs were violent and frequent, agitation was extreme, and the vomitings were accompanied with intense anguish. In this form or degree of the disease, an indication for detraction of blood, either by the lancet, or by means of cupping, or by leeches, was believed to be found; and MM. Husson, Honoré, Gendrin, and others, had recourse to the antiphlogistic method with success.

Other patients appeared with an assemblage of very singular spasmodic symptoms. Cramps, occupying simultaneously or successively almost all the muscles of the trunk and extremities, appeared the leading symptom of the disorder; the patient was in incessant agitation, uttered piercing cries, rolled in his bed, and often even threw himself on the floor, without being able to obtain a moment's respite. In some, who had almost no vomiting or purging, the countenance was red and congested, the eye brilliant, the belly tense, and the urine suppressed; and, had not the precursors of the disease been almost like those observed in other cases, it might have been mistaken for another disorder. Though in these cases of spasmodic cholera it was still thought useful to draw blood, the urgency of controlling what was denominated nervous irritation was admitted; and in these circumstances, several physicians obtained good effects from the use of opium in large doses, long-continued baths, and numerous analogous means.

Lastly, some patients presented all the symptoms of *cholera* deemed inflammatory. Pain, aggravated by the slightest pressure, burning thirst, general heat, red tongue, and hard pulse; and in these circumstances the means employed were modified by the vigour of the subject and the period at which he was brought to the hospital.

Thus some days of experience were sufficient to demonstrate this great truth, that in *cholera*, as in every other disease, the treatment, regulated by observation is, alone, good and practicable, and that it is absurd to adopt a uniform and general therapeutic system. Was the eruption of this formidable epidemic in Paris in 1832 requisite to furnish occasion to prove, that exclusive principles, always fallacious, are particularly so in the practice of medicine, and that the search for a specific may be abandoned with that for the philosopher's stone.

The principal indications now specified, forming the basis of some partial modes of treatment, we shall mention the more general ideas which served as the foundation of special methods. We do not allude to specifics, but to a mode of treatment with reference to etiological ideas more or less founded on observations of some isolated facts, or on analogy with other disorders, the ultimate nature of which is better understood.

Many physicians, for instance, regarded *cholera* as the result of a species of miasmatic poisoning, and on this supposition founded their treatment. The painters' colic is accompanied with symptoms similar in some points of view to those of cholera. Hence the idea of employing in the last affection the sulphate of *alumina,* sulphuric lemonade, and other remedies, which peculiarly modify the intestinal tube when under the influence of the oxides of lead. This method MM. Gendrin, Sanson, and others employed, and, it must be admitted, without any success.

M. Dupuytren considering the most frequent symptom that of the colliquative extenuating diarrhœa, as the one which most urgently demanded the attention of the practitioner, prescribed acetate of lead and the preparations of opium. He believed, that these remedies, administered in large doses, would victoriously oppose the extreme determination to the small intestine, and re-establish the balance by the sole operation of their astringent and sedative properties. This theoretical view derived more or less plausibility from analogy ; but it gave way under clinical experiment ; and it was requisite to abandon it after some trials conducted with becoming precautions.

The therapeutic measures underwent several modifications suggested by the leading symptoms. Each physician had a peculiar method ; and in this we observe great diversity, if not in substance, at least in form.

In the refrigerating period, M. Magendie gave internally diffusible stimulants ; MM. Petit, Honoré, Gendrin, and several others, employed friction of the trunk and extremities with hot aromatic liquors ; some physicians placed the patient in a vapour-bath ; others enveloped him in woollen coverings, and conveyed under them, by means of an appropriate tube, a large supply of alcoholic vapour. Lastly, M. Recamier employed cold affusion, or at least affusion of water at 57, 58, or 59 degrees only, for one or two minutes over the whole surface ; a method which produced energetic reaction, and almost instantaneously restored heat and sweat. The extremities of the patient were surrounded with hot bricks, hot smoothing-irons, bags filled with hot sand, bottles of hot water ; and in short, nothing was neglected to produce speedily the result.

At a period less advanced, when the patient, yet retaining a little heat, was suffering from vomiting and purging so profuse as to threaten immediate dissolution, means also very varied, and suggested by some peculiar systematic notions, were adopted. Thus the physiological physicians applied leeches to the epigastrium, opened the veins of the arm, administered soothing drinks, and, in short, studied to allay the irritation of the digestive apparatus. Others, attaching less importance to these symptoms styled inflammatory, did not hesitate to employ means more active, more direct, and more likely to augment the disturbed action of the disordered organs. This revulsion, as the followers of M. Broussais termed it, brought about most happy changes. Tartrate of antimony, in the dose of 2 or 3 grains, ipecacuan, in a quantity varying from 15 to 18 grains to a scruple, and even more, was administered boldly, and with the happiest effect. In this M. Recamier imitated the Germans, who have long boasted the superiority of this substance in the treatment of dysentery, and other acute affections of the intestinal tube. The vomiting, increased at first, soon ceased, and with it the intestinal discharges ; and gentle uniform warmth then followed, the skin was covered by sweat, the cramps ceased, and tranquillity of the system was restored. These effects obtained in a great number of patients, induced almost all the other physicians to employ the same remedy; and at present ipecacuan is in frequent use in the treatment of cholera.

Under the influence of the same idea, the same physician employed the sulphate, and the carbonate of soda and of magnesia, in ordinary purgative doses. The choleric diarrhœa was by this very simple remedy very promptly controlled; and we owe to it numerous cures.

When the patient in the deepest collapse appears insensible to every stimulant, the electro-puncture has been used with some benefit; and to this M. Bally is indebted for reviving several patients in this hopeless condition. An agent still more active, namely, cauterization of the epigastrium, was also employed; but M. Dupuytren, by whom it was used, has had no reason to commend it. Lastly, with the same object, several drops of ether saturated with camphor, were administered with apparent advantage by M. Recamier.

Besides the local bleeding by means of leeches or cupping, and those practised at the arm and jugular vein by the lancet, arteriotomy was performed on a number of subjects, who, it must be confessed, appeared to derive from it no benefit. The temporal artery was opened by MM. Magendie, Recamier, Gendrin, and several others; and by this means some spoonsful of rose-coloured blood, with impaired fluidity, trickled away as if from a venous tube. In two subjects, it was determined to open the radial artery a little above the articulation of the thumb, where it is superficial, and may be easily tied. It was then observed that this vascular trunk scarcely contained a feeble thread of blood, the motion of which was so much retarded, that the jet scarcely rose beyond the lips of the wound; the ventricular impulse was almost extinct, and, to obviate hemorrhage, a simple compress and ordinary bandage was sufficient. The thin plastic blood scarcely reddened the two or three turns of the roller which covered the wound of the artery; when reaction began to appear, there was no hemorrhage, properly so named; and ligature of the vessel was dispensed with as superfluous.

These facts are not new; and the surgeons of Berlin went a step farther. The brachial and even the crural artery was opened; and it will scarcely be credited that a distinguished surgeon, whose name we conceal, ventured to open the carotid artery, because the other arterial trunks had furnished no blood. It is related that the latter arteries being equally deficient, the operator introduced a stylet into the aorta and left ventricle to rouse it to new contractions. Death took place on these manœuvres, although denied by one of the admirers of this chirurgical hardihood; and there was not time to see the patient sink under hemorrhage.

Though arteriotomy is practicable in the treatment of severe *cholera*, it is probable that it ought not to be employed, because the arterial system is not the seat of the mischief. The venous blood is manifestly changed, while that of the arteries is merely deficient in quantity. If this were practicable, it would be more rational to attempt transfusion, than to deprive the system of the little stimulus left. But rational physicians who admit as a therapeutic agent that only which bears a relation to well-marked symptoms, will have recourse to suitable means; and we turn to those who particularly belong to this class.

We shall take a view, in the meantime, of the method employed by each of the physicians of the Hotel-Dieu, and the results obtained in their different departments. We shall do so in reference to the peculiar circumstances presented, and which have influenced the numerical amount of the deaths and recoveries.

The first 7 beds of the St Martine Ward being under the care of M.

Honore', we shall begin with that honourable practitioner. M. Honoré, distinguishing two well-marked periods in the progress of cholera, prescribed the following treatment. During the attacks, that is, when vomiting and looseness, cramps, refrigeration, and more or less *aphonia* were urgent, friction on the extremities and the precordial region, from half hour to half hour, with flannel soaked in a mixture of two ounces of spirit of camphor, and half a drachm of tincture of cantharides; 2*d*, to administer every half hour *enemata*, consisting of rice decoction 1 pint, extract of rhatany 2 drachms, laudanum 40 drops, and ether 4 drachms,—the whole divided into 4 *enemata*; 3*d*, every half hour a spoonful of Malaga wine; 4*th*, carbonated water, or sugared tea for drink; and 5*th*, the anti-emetic of Dehaen, with 15 drops of laudanum, and half a drachm of the anodyne liquor of Hoffmann. If, in spite of all these means, the vomiting continues, a large blister was applied to the middle of the back. Lastly, there was administered in the night, in spoonfuls, a potion consisting of Malaga wine for its basis, and a large proportion of the syrup of *diacodium*; then revellents were applied to the feet, &c.

In the period of reaction, the treatment was regulated by the leading symptoms. Blood, for instance, was drawn from the arm, or by leeches from the epigastric iliac regions, according as symptoms of morbid congestion appeared in different points of the digestive apparatus. M. Honoré, finally, has generalized in some degree his opinion on the general treatment of *cholera* by confining it to three indications;—to restore warmth, to oppose by all possible means the concentration which tends to the centre, and then at a subsequent period to moderate the effort of reaction which takes place in the opposite direction.

About 40 patients of both sexes were treated in the beds allotted to M. Honoré during the first 7 days of the epidemic; and half of the number expired. It must be mentioned that 4 or 5 individuals at least were brought dying, and remained only 1 or 2 hours in the ward, so that to them no cure could be administered. After this period, that is, during the succeeding 8 days, nearly a like number of patients entered the same division; and the results were the same. It must, therefore, be admitted that this mode of treatment has been at once one of the most simple and the most successful. This observation is not new; but its repetition at present is not superfluous.

M. Gendrin, who comes next in the numerical series, distinguishes in general four degrees of the disease; precursors lasting for days; vomiting and cramps; then violescence of the face and extremities; and, lastly, reaction. Half an ounce of sulphate of *alumina* was dissolved in a mixture consisting of 2 ounces of barley-water, and 2 ounces of syrup of quinces, with 3 grains of the bare extract, and a spoonful was given every half hour in a glass of cold water, which was also used for drink. A bladder full of pounded ice was applied to the belly, and the extremities were vigorously rubbed with a mixture of equal parts of the balsam of Fioraventi and traumatic alcohol. Lastly, the patients in stupor and *asphyxia* were subjected to the cold affusion for 1 or 2 minutes.

These measures were not followed with all the success desired; and the same physician afterwards varied his directions considerably. Latterly, he appeared to confide for the treatment of the early period of the disease in blood-letting, energetic revellents to the inferior extremities, and the internal use of ipecacuan. These means furnished favourable results, but only when the intensity of the epidemic appeared to abate. M. Laberge, resident pupil of M. Gendrin, has stated, that at first 1 cure only was obtained among 7 or 8 patients.

The following beds belonging to M. Dupuytren, were occupied by a very great number of patients with severe symptoms, and of whom, consequently, a considerable proportion, more than two-thirds, sunk. A certain number, indeed, of these choleric cases brought moribund, expired either on the stairs, while they were being conducted to the ward, or on the litter, before there was time to undress them ; and these cases, though reckoned in administrative statistics, ought to be deducted from the medical report. Documents afterwards published by M. Dupuytren show, that from the 7th April to the 13th he has lost a little more than a third of his patients,—a result which restores the equilibrium, and shows that the numerical mortality has been raised only in consequence of accident which placed on his beds dead subjects or patients in the last agonies.

The treatment of M. Dupuytren, besides the acetate of lead, already mentioned, and cauterization of the epigastrium, which was practised in one case only, consisted in friction of the extremities with flannel soaked in a concentrated decoction of mustard with alcohol, covering the body with emollient fomentations, leeches applied where pain was felt, and lastly, drink of infusion of lime-tree flowers, edulcorated with syrup of *diacodium*, in the rate of one or two ounces to the pint of ptisan. Subsequently the professor announced that he confined himself to follow indications as they rose, and abandoned all thought of specific cure.

M. Petit, perhaps, was the first to entertain the opinion of acting in a continuous manner on the spinal chord, and producing changes in the phenomena of innervation. He consequently caused to be placed along the whole part of the spine a piece of cloth soaked in a liniment composed of one ounce of oil of turpentine, and a drachm of hartshorn. Over this was drawn a very hot smoothing iron ; and the result is an instantaneous evaporation of a great part of the liniment, which then acts strongly on the skin of this region, and produces speedy vesication. By this ingenious method the spinal chord is irritated, and very soon under this influence the heat returns, the vomiting and cramps abate, the circulation is re-established, and the patient experiences considerable improvement. Its action is further promoted by various accessory means, such as hot bricks, previously enveloped in cloths dipped in vinegar, round the extremities, frictions, with decoction of mustard, stimulated by hartshorn, and the internal use of balm and mint tea. At the same time, a mixture consisting of distilled lime-tree and balm waters, two ounces each, 20 drops of laudanum, and one ounce of etherated syrup is given in spoonfuls every hour, and frictions by a liniment composed of two ounces of camphorated chamomile, a drachm of laudanum, and a drachm of hartshorn, are actively used.

Though, like all the physicians of the Hotel-Dieu, M. Petit lost during the first days of the epidemic a very great number of patients, afterwards he was more fortunate than many among them, and probably in consequence of his method of treatment. According to a notice read by him to the Academy of Medicine, on the 10th April, his cures were in the proportion of two in three. We repeat that this can apply only to the patients admitted since the 5th April ; for, previous to that in the St Martine and St Monica Wards, the proportion was inverted.

M. Husson employed at first the diffusible stimulants, tonics, and external revellents or irritants. The unsuccessful results were very numerous ; and other methods were practised. He applied leeches, bled, and administered mild drinks ; he had recourse then to the anti-emetic potion of Riverius ; then to protracted baths, to anodyne clysters, and, under the influence of this method, he saw several recoveries take place. They were indeed few ; for, on the 14th day of the epidemic, of 140 choleric patients placed on his beds, he counted only 5 or 6 well established cures. Too much reliance must not be placed on convalescent cases, for they often expire very quickly, without time being given almost for a relapse.

The treatment pursued by M. Magendie enjoys, in the meantime, a celebrity quite popular. Journals of all ranks have proclaimed the good effects of punch ; and they might be believed if we knew how far publications of this sort must be trusted. A diffusible stimulant given in the cold stage produces reaction ; but it must not from this be inferred that all the patients are thus cured. Like all his colleagues of the Hotel-Dieu, M. Magendie witnessed more than one-half of his choleric patients expire; and, modifying his *panacea,* he now gives as a drink a mixture of two ounces of acetate of ammonia, one pound of sugar, and four *litres* (8 pints) of infusion of chamomile. Occasionally he substitutes for the punch a vinous liquor sugared and spiced with tincture of *canella,* in the proportion of two ounces to two *litres,* or four pints of wine, of which a small glassful is given every hour.

This treatment has been followed by a degree of reaction which it is often difficult to control. The circulation excited by alcohol soon produces congestions in the head, and digestive apparatus ; and more than one patient sunk with delirium, and afterwards deep coma. This congestive state, local and general depletion were always as inadequate to remedy as the application of cold to the head, and the most active revellent irritants to the feet.

M. GUENEAU DE MUSSY, with his usual sagacity, followed the indications, and treated the principal symptoms as they required. Like M. HONORE' he obtained favourable results from this progress ; he modified the *formulæ* according to the particular cases which were presented ; and recognizing the uselessness of a great display of resources against cases which the simplest examination showed to be fatal, he was contented to treat those which might reasonably become so.

M. BALLY has tried the efficacy of many energetic agents. *Opium,* given in large doses by all channels, he very soon abandoned as injurious in the period of collapse, and useless in others. The *sulphate of quinine,* in doses of from 30 to 40 grains, produced no benefit in four patients, and was also abandoned. The oil of *croton tiglium,* so much commended by several physicians of the East India Company's service, was of no avail to a poor woman, who quickly expired. Local and general bleedings, iced water, and other means were successively relinquished. *Lastly,* recourse was had to galvanism, which appeared to revive with promptitude *two* or *three* patients brought in a very advanced stage of the disease ; but it has rarely been employed since ; and M. Bally satisfies himself with general measures, excepting the modifications which are the result of his peculiar therapeutical ideas. In conclusion, if he has lost many more cases than his colleagues, it partly depends on this circumstance, that the 30 or 40 first choleric cases brought to the Hotel-Dieu were treated by him alone, and that, with a single exception, all of these died.

M. RECAMIER found, in these afflicting circumstances, a new occasion to demonstrate the fertility of the resources of his inventive mind. Has this celebrated practitioner been more fortunate in results? That we cannot assert. In the mild form, or in the period of onset, he draws blood from the veins, till this fluid appears to become red in the air; he gives every second hour eight drops of laudanum in four spoonfuls of rice mucilage or gum arabic, aromatised with peppermint water. He warms the patient to restore heat and transpiration ; he applies to the belly very hot cataplasms slightly stimulated with mustard, or a volatile camphorated irritating liniment ; he orders repeated injections with decoction of bran, of starch, or of bread-crumb, adding a little laudanum. If the diarrhœa continues, he exhibits half an ounce of *arnica* root and one-fourth of a grain of nux vomica, gradually augmented afterwards.

In violent *cholera,* or the blue stage, M. Recamier still bleeds a little, but cautiously ; he excites reaction by means of affusion for a single minute of water at 58 or 59 F., and after drying the patient and placing him in a warmed bed, the skin is very soon covered with sweat. With cold rice water for drink, a spoonful of a solution of sulphate or of hydrochlorate of soda, according to the state of the stomach, was given every quarter of an hour. Reaction being established, the treatment of the first stage is gradually introduced, and the chief study is then to moderate the congestions which take place on the different organs.

M. Recamier states that he has ascertained that opium, camphorated ether, acetate of ammonia, sulphate of quinine, and the other fixed or diffusible tonics, are absolutely useless in the blue period, and that sinapisms and all the rubefacients are equally unavailing. The small number of recoveries even which he obtained in the commencement of the epidemic appears to him to be owing to the cold affusion, the iced drinks, and the blood-letting. Afterwards, the same physician had recourse to sulphate of soda in strongly purgative doses, to ipecacuan in powder and decoction, and massing or kneading the surface instead of friction; but he contends that the different periods of the disease should be well distinguished. The blue period is, in his opinion, utterly beyond the resources of art; vital resistance is extinct, and the means employed to excite its return serve only to accelerate death, because the organism does not obey them. It is as if a whip struck a corpse.

M. SANSON began by prescribing a very hot and strongly sinapised *pediluvium*, or by subjecting the patient for some minutes to the cold affusion. He then ordered a spoonful of a mixture of four ounces of the jalap of diacodium, and one drachm of sulphate of alumina, to be given every hour; two clysters daily of decoction of poppy heads, and a drachm and a half of sulphate of alumina, and rice decoction, for drink. M. SANSON remarked that the aluminous mixture, which has a very nauseous taste, appeared agreeable to the patients for some time, but became soon insupportable. In the first case, there was endurance of the stomach, and it ceased as soon as the symptoms were abated. Under the influence of this treatment, as of all the rest, the half at least of the patients died.

M. BRESCHET, who had at first adopted the electro-puncture, very soon abandoned this remedy, the success of which was only temporary and ineffectual. He gave diffusible stimulants of every kind; he bled, cupped, and scarified the epigastric region, and gave cool liquors for drink. He employed volatile liniments, affusions, external revellents of every kind, but nothing in particular.

We may say as much of M. CAILLARD, who, engaged by the nature of his duties at the Hotel-Dieu, leaves to zealous and intelligent pupils the charge of carrying into effect a plan of treatment, the outline of which he concerts with them. These gentlemen have not had occasion to regret the loss of a greater number of patients than the other physicians; and the result affords a new proof of the little efficacy of any therapeutic method in cases of severe cholera.

In conclusion, to establish in a general manner the value of the different curative methods adopted at the Hotel-Dieu; and to avoid an unjust division of unsuccessful issues among the 12 heads of the service, we shall give the general results, leaving to each of these gentlemen to furnish the individual returns. Thus on the 17th April, at midnight, 1771 choleric patients had been admitted into the Hotel-Dieu; of this number 1054 died; 344 went out cured or convalescent, and the residual 373 are still under treatment, and several must die. This shows that these deaths are in the proportion of two-thirds.

Professor CHOMEL, who conducts at the Hotel-Dieu the course of clinical medicine for the faculty, had received in his wards during the first days of the epidemic two choleric cases of the inflammatory character, which, treated by antiphlogistic measures, underwent at first a remarkable improvement. In one patient, typhoid symptoms soon supervened, and carried him off on the 5th day of his convalescence. The other sunk in like manner, after showing remarkable improvement.

The distribution of the choleric patients in the first two wards, being opposed to that of which M. Chomel had charge, it was only afterwards that a division of the St Paul ward was assigned him. In this division remedial means were wisely afforded; and after a conscientious examination, we have found that the treatment of this distinguished practitioner, though neither extraordinary, nor very energetic, nor incendiary, nor extenuating, furnished neither more fatal cases nor less success, than that of physicians who announced pompous results from particular methods.

In all the cases of cholera deemed inflammatory, that is, with preservation of pulse and heat, cramps and vomiting, &c. M. Chomel prescribed blood-letting, and applied leeches to the epigastrium, and gave opium in pills. For drink he gave solution of gum syrup; the belly was covered with cataplasms, and the legs were rubbed with camphorated oil of chamomile.

In the *cholera algida*, or chill form, he employed decoction of coffee and a blister on the spine, from the nape to the middle of the dorsal region. External warmth was applied by all means. The gum-syrup solution formed the basis of the fluids drank, though tea and lime-tree infusion were also given, and for the diarrhœa rice-ptisan with opium. In some cases of chill cholera, M. Chomel employs the blister to the epigastric region, and placed on the exposed *derma* half a grain of acetate of morphia. In cases with delirium he applied leeches to the mastoid processes, and, in short, founded his prescriptions on the character of the principal symptoms.

We shall be able only subsequently to furnish an exact statement of the number and kind of the patients treated in the division of M. Chomel; but we may be assured that its exactness will be unfortunately too rare in the actual circumstances. We shall in the meantime advert to the results obtained in other hospitals.

La Charité. The central position of this hospital brought to it a great number of patients; and on the 27th, there were 3 cases. From this period to the 2d April, 30 new cases were admitted, on the disposition of which the same precautions were observed as at the Hotel Dieu. Two wards, St Jean de Dieu for men, St Magdalene for women, were selected as the most salubrious and the best situate to facilitate the duty. MM. Fouquier, Lerminier, Rullier, Rayer, and Dance, shared the beds in equal numbers.

Entertaining nearly the same opinions on the mode of opposing the disease, these practitioners studied to produce reaction as promptly as possible, and to control it when it displayed excessive violence. M. Fouquier prescribed in a potion of aromatic distilled water two drachms of acetate of ammonia, and one ounce of canelion water, to be given in spoonfuls. He ordered also three or four grains of the watery extract of opium, in divided doses, during the day; several sinapisms at the same time to the legs, to be renewed if needful; frictions with camphorated spirit; and infusion of chamomile for common drink. When reaction was speedy and vigorous, he ordered fifteen or twenty leeches to the epigastrium.

M. Rullier caused the bodies of his patients to be rubbed with a liniment consisting of tincture of bark and camphor; he applied sinapisms, and administered every half hour spoonfuls of a mixture consisting of a scruple of sulphuric ether, a drachm of laudanum, and an ounce and a-half of distilled water of lime-tree and mint, in a decoction of poppy heads properly edulcorated.

After frictions and other external means of warming the patients, M. Lerminier caused them to drink a small glassful every hour of a mixture composed of two ounces of syrup of valerian, two drachms of alcohol, and twenty-four drops of *aqua ammoniæ*, in two pints of infusion of mint and orange flowers. In the intervals, or instead of this stimulating ptisan, he prescribed a mixture consisting of two ounces of peppermint-water, half an ounce of acetate of ammonia, two drachms of sulphuric ether, two drachms of laudanum, and two ounces of syrup of eyebright. By these remedies a good degree of heat was promptly obtained, and to them more than one patient owed his recovery.

We wish we could detail the treatment pursued by the young and unfortunate M. Dance, who was to have published in the Archives the result of his observations on *cholera*; and the acuteness and conscientiousness with which they would be made are well known. A deplorable event deprives us of the information to be furnished by an observer so judicious; and we know only that the treatment which he had begun to follow was that of M. Fouquier already mentioned. *

By a note of M. Danyau, head of the clinical department of La Charité, we learn, that of 83 cases admitted under M. Dance, 40 died, 12 were cured, and the rest were under treatment. Among the 40 deaths, two-thirds died after remaining less than three hours in the hospital, part of the residue in twenty-four hours, and none survived the third day. M. Dance derived great advantage from the application of dry cupping applied round the base of the chest; and M. Danyau, who continued his duty, has much reason to congratulate himself on the use of the means which has superseded *asphyxia*, and revived the action of the heart. M. Dance had almost entirely renounced the employment of opium, especially by the mouth; and he gave cold lemonade, Seltzer water, and ice in pieces; and these means almost always succeeded in checking the vomiting.

M. Rayer, one of the physicians who has in the best spirit observed cholera, has given us a note which we almost literally transcribe, because it constitutes one of the most useful documents on the treatment to be followed in the different forms of the disease.

The first choleric cases entrusted to the care of M. Rayer were mostly in a desperate state. They were old men dying, or adults with the most severe symptoms of cholera. At first glance, and at any other period, they might have been taken for drowned persons expiring. Next day, and the following one, similar admissions continued; but several patients were now distinguished in whom life appeared less nearly extinct; and several hospital patients were attacked, and presented successively the several symptoms of the different stages. Comparing these facts with some others much less severe observed in the city, M. Rayer perceived, that it was less important to seek a remedy against cholera than to study carefully its individual varieties, the shades, the degrees, and the complications, in order to adapt to its periods, or its various forms, a distinct and rational treatment. With this object, and to distinguish the principal conditions in which each patient was at the moment of admission, he fixed on the leaf of his diagnostic register; *slight cholera, or the first period of cholera; severe or chill cholera; simple or complicated cholera; cholera slight at beginning*, or with threatening of the second; and the adopted peculiar modes of treatment for each of these morbid conditions.

In *slight cholera*, or the *first period*, distinguished by the feeling of a bar across the pit of the stomach, and giddiness, soon followed by thirst, purging, and vomiting, more or less abundant and repeated, by the continuance of the pulse almost natural, or only slightly enfeebled, with little change of voice, cooling of the head, or in the colour of the nails and skin of the hands,—M. Rayer administers opiates and rhatany root in draught, ptisan, or clyster, as the evacuations take place upwards or downwards. At the same time he recommends maintaining a gentle degree of heat of the surface; even to raise the temperature, and excite sweating by the aid of hot bricks at the flanks, and bags of hot bran on the belly; cramps are to be stopped by the application of sinapisms; and thus a cure almost uniformly is effected in children and persons of mature age, unless the symptoms of the second period appear, which usually happen in old men, or in men of mature age but deeply impaired constitution.

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* M. Dance, physician to the Cochin Hospital, was attacked with cholera about the beginning of April, and died, after a painful struggle, on the 18th. M. Dance is well known to the readers of this Journal as the author of many valuable papers in the *Archives*.

In *severe* or *chill* cholera, marked by burning thirst, discharges of watery turbid whitish matter upwards and downwards, and by suppressed urine, &c. M. Rayer orders the application of four sinapisms, two to the legs and two to the fore-arm, compresses impregnated with hartshorn on the chest, etherated Malaga wine given in spoonfuls every two hours, less frequently if it is not borne; decoction of rhatany acidulated with citron-juice; dry frictions and warmth to the surface; and clysters of rhatany, etherated and opiated. By these means reaction may be developed, unless in persons beyond 70, in whom life is extinguished almost directly by the cold stage of the disease. In one person only beyond 70, a woman of 74, did M. Rayer witness reaction established.

When reaction takes place it is requisite to maintain it, and yet to keep it within due bounds; and unless this is done, local determinations and violent inflammations,—*secondary disorders,* greatly more frequent now than at the commencement of the epidemic, are established; and existing diseases are at the same time aggravated. As a secondary disease, M. Rayer observed among about 200 cholera patients, one acute *peritonitis,* one *amygdalitis,* two cases of *erysipelas* of the face, three cases of *pneumonia,* several of *gastritis,* and a greater number of *cerebral affections,* slight or severe. After death he never met inflammation of the *spinal chord,* or the great sympathetic. To watch the arising symptoms of these diseases, M. Rayer performed two visits daily to the hospital; and in the interval the cases were observed by an intelligent pupil.

According to M. Rayer, the cerebral affections observed after the chill stage have a *double origin.* In one the most rare, *(the choleric cerebral state,)* in consequence of reaction, feeble or incomplete, the patients retain a choleric colour, fall into a state of stupor and debility, with furred tongue and brown coating of the teeth, the face cold, and the radial pulse feeble; and if this state continues some days, the patients present the expression symptomatic of the third period of ileo-glandular inflammation, *dothin-enteritis;* and after death no visible lesion was found in the brain and its membranes. In the second case *(cerebral congestion,)* in consequence of powerful reaction, spontaneous or induced by art, the patient becomes dull and stupid; the face is red and hot, especially in the evening, the pulse more distinct, and the eyes injected; agitation and sometimes delirium take place in the night, with red dry tongue, thirst, &c.; and after death in general the cerebral veins are injected, and sometimes the cerebral substance is of a rose-red tint, with or without serous fluid in the cerebral cavities. In the first case M. Rayer ordered blisters to the inside of the legs, if the sinapisms employed in the chill period had not vesicated, vinous water for drink, and clysters of etherated rhatany decoction. In the second state, and sometimes before its developement, from the first moment of strong reaction before the appearance of cerebral symptoms, M. Rayer prescribed warmth to the feet, cold by compresses, or ice to the forehead for several hours, especially in the evening, or leeches behind the ears, and keeping the patient up during the day if possible. Local inflammations were observed to be more severe in choleric subjects than in any other condition; and blood-letting, though urgently indicated, proved speedily fatal. A choleric patient attacked by *pneumonia* of the left side died some hours after blood-letting; and the inferior lobe of the lung was found condensed and infiltrated with black violet-coloured blood, similar to mulberry juice.

M. Rayer saw cholera induce abortion in pregnant females, supervene at the moment of labour, and the infant born dead, and in those suckling gave rise to the most severe and fatal symptoms. Cholera appearing in persons already attacked with other affections, always belongs to the first class.

Occasionally the first disease disappears after the cure of the cholera, as happened to an Englishman labouring under tertian fever; and in other cases it is little modified, as occurred in a young person with the third degree of *pneumonia*, and in whom, after the cure of the cholera, resolution proceeded. Lastly, the original disease may be unmodified, as occurred in several consumptive subjects who survived the choleric attack, and in two persons with itch, who contracted the epidemic disease.

De la Pitié.—This hospital, situate near several very populous quarters, early received a great number of patients, who filled two wards. MM. Andral, Bouillaud, Louis, Clement, Parent-du-Chatelet and Serres, as physicians, and MM. Lisfranc and Velpeau, among the surgeons, had the equal charge of the beds, and they determined that a physician and a surgeon should be always in attendance at the hospital to minister to the patients brought. In the first four cases, brought on Thursday 29th March, M. Serres prescribed infusion of chamomile, and a draught of ether and laudanum in valerian and mint-water. Three of these died the same day, and the fourth had favourable reaction, and went out well at the end of eight or ten days.

The physicians of the hospital adopted at first a uniform mode of treatment, the basis of their remedies being warm vegetable diluents, with opium by the mouth and by clyster, and warming the beds by means of alcoholic vapour. Independent of the obvious impropriety of so general a mode of management, without regard to the character of individual cases, narcotism quickly appeared in the majority, without arresting the unfavourable symptoms of the disease. This method was therefore abandoned; and each physician undertook the treatment of 12 patients, six of each sex, according to the symptoms and the stage of the disease.

M. Andral substituted for the narcotic potion a mixture composed of one drachm of acetate of ammonia, 15 grains of sulphate of quinine, 20 drops of sulphuric ether, and 20 grains of camphor; allowed cold lemonade; and caused the extremities to be rubbed with tincture of cantharides. For profuse diarrhœa he ordered clysters, containing each 20 drops of laudanum, and 20 grains of sulphate of quinine. During reaction, blood-letting, local or general, was employed according to circumstances. At the onset of the disease, M. Andral at first employed blood-letting and afterwards ipecacuan.

M. Bouillaud found in the first dissections sufficient reason to employ antiphlogistic means freely, with revellents and opiates only; and on the 6th April, he had already inspected the bodies of more than 40 victims of the disease. Though he maintains that inflammation of the intestinal mucous membrane performs an important part on the disease, and makes one of its essential elements, he admits that the antiphlogistic method is useful only at the onset of the disease, before the chill stage. Leeches to the epigastric region repeated, if requisite, four or five times, iced liquors, currant-water, emollient cataplasms and clysters slightly narcotized, and a strict diet, are his chief remedial means. In severe cases, however, he allows weak coffee, and cauterizes the region of the spine after the method of M. Petit; and under this application, breathing and the motion of the heart was restored in individuals who appeared dead.

M. Clement placed great reliance on the preparations of quinine, which were applied endermically when they seemed to augment vomiting; and in one case 50 grains were applied to the epigastrium, thighs, &c.; in other cases by the mouth and by clyster.

M. Serres employed the anti-emetic draught of *Riverius*, tartaric and citric acids, blisters and sinapisms, during collapse, and blood-letting, general and local, in the stage of reaction.

M. Parent-Du-Chatelet prescribes, in the severe period, alcoholized lemonade, an etherated draught, Madeira, a clyster of rice-water, with extract of rhatany and laudanum, and friction; during reaction, emollient liquids and venesection, if requisite. These means have been successful in many cases, and have been adequate to restore some of those who were narcotized during the treatment of the first days of the epidemic.

It has been impossible hitherto to obtain accurate returns of the number of cases of both sexes treated under M. Louis; but, according to the statements of M. Eager, his pupil, with a sufficient number of blue cases, the instances of ordinary cholera were numerous. The general treatment of the cold stage consisted in friction and hot cloths externally, alcohol and laudanum draughts internally, ice for checking the vomiting, and local and general bleeding, which appeared to relieve the oppression, but which was generally unavailing when the radial artery had ceased to beat. During reaction the disposition to local congestion was opposed by local and general blood-letting, which sometimes succeeded, but more frequently failed.

In the necroscopic inspections of this physician, the same results were almost uniformly remarked. The intestinal mucous membrane of the small or large intestines was commonly ecchymosed; in other cases the submucous cellular tissue was much injected; the *plicæ* of the jejunum sometimes remarkably injected; the mesenteric vessels, the superior and inferior *cavæ*, loaded with dark-coloured blood; the heart filled with black coagulated blood; the lungs much obstructed with black blood; the bladder remarkably retracted, but its mucous membrane sound; the liver slightly injected; the gall-bladder distended with black ropy bile; the Peyerian glands usually well-marked, distinct, and prominent; violet-red patches in various points of the intestinal mucous membrane; the gastric mucous membrane, like the intestinal, more or less reddened, and often remarkably mammillated. The brain, sometimes injected, contained serous fluid, more or less clear. The skin was violet-coloured; and tetanic rigidity of the extremities was always distinct.

M. Velpeau, like all his colleagues, varied his treatment according to the indications. After the 3d April, for the opiate he substituted mercurial frictions apparently without benefit. His general mode of treatment consisted, after rolling the patient in flannel, in sinapisms to the feet, knees, and thighs, blistering the epigastrium, clysters of sulphate of quinine, laudanum, and camphor, repeated as required, aromatic diluents, and the endermal use of quinine. By these means several, apparently dying, recovered. M. Velpeau tried charcoal internally, punch, and large doses of calomel without advantage.

The supposition of M. Reveille Parise, that persons with cauterized issues, blisters, or even old wounds, are not attacked by cholera, was disproved by the experience of M. Velpeau, who saw six women attacked in a surgical ward, where they were kept for old ulcers and other diseases with established suppuration.

Between the 11th and 18th April inclusive, M. Velpeau lost 11 of 30 choleric patients; 6 went out well, 5 were convalescent, and 8 remained under treatment; and in the two latter divisions several deaths did take place, and reduced the number to one-half. This proportion is small, and all candid physicians agree that it is often much more. It remains, nevertheless, to be told what number of these cases were severe, what number were women, and at what period they were brought to the hospital; and it is further to be remarked, that the mortality at the time specified was less than at the beginning of the epidemic. The following sketch by M. V. gives a general idea of the cases treated at La Pitié.

Between the 30th March and the 15th April, 592 choleric cases were admitted into the hospital of La Pitié; and of this number 103 went out cured, 176 remain under treatment, and 313 died. During the first week they presented in mass with vomiting, diarrhœa of very fluid white discharges, cramps in the arms, colic pains, hollow eyes, icy cold of the head and arms, violet tint of the face and hands, thready or insensible pulse, and extinct voice. Afterwards this assemblage of symptoms was no longer observed in so large a proportion. Blueness and chillness were wanting in many of those admitted the last week. Some had only profuse exhausting diarrhœa with the choleric characters. Some were distressed by nausea, and cramps, and had a bluish tint. Others colliquesced under profuse sweating, which was occasionally cold and clammy. Some with expressive look, complained of acute tenderness of the epigastrium, and burning heat all over. Lastly, in this as in other hospitals, we saw cases which proceeded at once to the highest degree, and in all intermediate shades; and it is impossible to distinguish between the cases of genuine *cholera* and the choleroid. Many persons, after undergoing the first period for 5 or 6 days, became victims of the second,—showing that they are probably only different degrees of the same disease.

As to predisposing and exciting causes, and hygienic conditions, we have nothing definitive or conclusive. Old men, valetudinarians, drunkards, ill-clothed, and ill-fed subjects, who at first afforded so many cases, were soon accompanied in their calamitous attacks by persons of every age, and of all constitutions, who, without being in affluence, observed, nevertheless, substantial regimen, and led regular lives. They came from the best situate streets, *(la rue Copeau, la rue de Boulanger,)* as from the most unhealthy. They were of all professions. Women, who formed only a fourth part at first, terminated in a much larger proportion. We had only three patients between 8 and 15 years; and at this date, (17th April,) we have all the varieties enumerated above. The livid tint is not so rare as some persons have asserted; and 4 cases of 6 received yesterday presented it in the highest degree. One person, though with all the other symptoms of severe *cholera*, has only *nausea*. A woman who had merely vomiting and cramps, without diarrhœa, died, nevertheless, this morning after thirty hours of illness. The number, however, of those who have only profuse discharges, slight cramps, without lividity or extinction of the pulse, and who recover, has sensibly increased for some days.

Patients die at two distinct periods. Either struck as if with lightning they die in agony before reaction, or heat indicates the return of the circulation; or after being painfully rescued from the first state so far as to seem out of danger, they relapse either into stupor with depression, or into delirium and adynamy, then linger a few days, and perish like others in defiance of the most varied modes of treatment.

One patient of this class having ceased to vomit, to be purged, and to suffer, having got rid of the blue colour and cadaverous look for two days, fell into a state of *coma vigil*, without delirium and raving, and without dry mouth, and died at the end of forty-eight hours without other symptoms. Another, after three days of improvement, died as if suffocated by œdematous *angina*, though the throat presented no change. A third case, which seemed for two days to be convalescent, was on the third day in a state of listlessness, of stupor, and agitation, which only ended with death in the evening. Lastly, they seem to be stifled under the influence of violent congestion, either of the brain, or of the lungs, or of some other organ.

In the first period, the tongue may be pale, smooth, nearly natural in some, and covered with grayish or yellowish thin fur in others. After re-action it may be slimy and whitish, red and punctulated on the edges, grayish, black, yellow, and moist,—or unchanged. It is crusted and parched in a small number.

The necroscopic appearances are pretty uniform. In most subjects the mucous membrane of the digestive passages is punctulated with minute ecchymotic spots, more or less approximated in its whole tract, and it may present large patches more or less intensely red, occasionally approaching to dark crimson. On Tuesday and Wednesday, for instance, I found in three subjects the stomach as black as coal, from the *cardia* to the *duodenum,* less so at the small arch, more at the large *fundus,* while neither washing nor friction could diminish this tint, which was without evident thickening or softening of the tissue. The blood appeared fixed in the capillaries, and the whole membranous surface was ecchymosed on the free margin of the *rugæ* as well as on their intervals. Great part of the small intestine presented the same appearance; but the colon was scarcely changed.

In others, though coloration was almost entirely deficient, the mucous membrane could not be termed sound. Its *villi,* thicker and more prominent, gave it a strongly marked villous character, though it was whitish, of a dull white, or merely dotted red. The red or bluish tint appears, all other circumstances being equal, to be deeper as the body is inspected later after death. The Peyerian glands were developed without manifest change. The lymphatic glands were unaltered; the system of the portal vein much obstructed. The bladder was empty and shrivelled; in one case only was it distended: and in other respects sound. Engorgement and sometimes *emphysema* of the lungs, *ecchymosis* of the heart, and black blood in its chambers, and more serous fluid than usual between the folds of the vertebral arachnoid, and in the cerebral ventricles and subarachnoid tissue were the other most ordinary appearances. The contents of the intestinal tube are well known.

The Hospital of St Louis received many choleric cases, which were at first admitted in two wards, but which were afterwards dispersed in all the divisions. Here, as elsewhere, very opposite methods of treatment were followed with nearly equal degrees of success.

ALIBERT, regarding *cholera* as a pernicious intermittent, after the example of Torti, who made it a particular species, gave sulphate of quinine in grain pills every hour, *cinchona* wine in spoonfuls every half hour, and *cinchona* glysters, with external warmth. The actual advantages of this method are not known, as it was soon modified by combining it with the preliminary exhibition of ipecacuan, when it is said to have been very successful.

M. BIETT, who had the charge of a ward of 28 beds favourably arranged, well-aired, and abundantly provided with the means of attendance, has treated a considerable number of choleric cases, the total amount of which, however, is not yet given. Adopting the idea of miasmatic poisoning as the cause of *cholera,* this physician administered internally charcoal in doses of half a drachm every hour, with the effect of checking the diarrhœa, and exciting the flow of bile, but not greatly controlling the cramps and vomiting. He states, also, that he has given the subnitrate of bismuth in doses of 6 or 8 grains every two hours with the effect of controlling the cramps. Calomel and opium was given in a few cases. In cases of local congestion, blood was drawn by cupping from the ileo-cœcal region, and by leeches from the anus. Of 19 cases, 13 are said to have been cured; but the precise mode of treatment is not given.

M. GERDY, second surgeon of this hospital, received from the 6th to the 14th April 103 cases; and of these, 20 died at the close of a few hours, and consequently could not display the effects of treatment; 16 died after one or more days of treatment; 23 went out cured; and lastly, 44 were still in hospital at the date of the report, and among these many truly convalescent. The number of deaths rose to about one-third of the whole,—a smaller proportion than elsewhere, and less still if the number of deaths be reduced by deducting those who expired without any treatment. The mortality is then 1 in 5 or 6 cases.

The first 27 cases were admitted at the most severe period of the epidemic, all with vomiting, pain of the epigastrium or belly, frequent stools, suppression of urine, feeble or extinct pulse, violescence of the face and extremities, coldness, and cramps. The subsequent group rarely offered this assemblage of symptoms, which then occurred separately or successively; and though the disease was less violent, many still died in some hours, 11, in short, of 20, or more than a half.

Viewing the disease as a species of *asphyxia* produced by affection of the nervous sytem, M. Gerdy employed friction by an irritating, but not vesicating, liniment, to recal heat; large blisters along the vertebral column to stimulate the organs of the nerves, and excite respiration and circulation, sinapisms for revulsion and allaying cramps; starch opiate clysters to obviate diarrhœa; in a few cases blood-letting to control congestion; and lemonade, pectoral ptisan, or sugared Seltzer water for drink. These means have in general fulfilled the indications proposed.

Hopital St Antoine, Hopital des Enfans, Hopital des Veneriens, Hopital Necker, &c.—The choleric cases admitted at St Antoine were numerous, and were placed under the care of the physicians, MM. Kapeler, Mailly, and Guerard, and of Professor Berard, the surgeon of the institution.

M. Kapeler administered at the onset of the epidemic, laudanum, laudanum and ether in mixture, cinchona clysters, with laudanum and extract of rhatany, dry aromatic frictions or sinapisms, and external heat. This mode of treatment was followed by speedy cures, and also violent attacks of cerebral congestion, which rapidly destroyed convalescents. Neither blood-letting nor leeches controlled the symptoms. Opium was then abandoned. The tepid bath, stimulated with 2 lbs. of soda or potass, followed by 30 drops of laudanum, were soon followed by heat and transpiration. In cases of deep collapse an etherated camphor mixture was given by the stomach, and camphor was thrown into the intestines; and a terebinthinate camphor liniment was actively rubbed on the person. Sulphate of quinine and cold affusion are said to have been used without benefit.

M. MAILLY, who gave little opium except at the onset, employed acetate of ammonia, etherated syrup, and infusion of peppermint in the cold stage; and congestion he opposed by leeches and temporary blisters. By these means several cures were effected. Of 70 cases admitted into the St Paul and St Cecilia wards under his care, between the 1st and 6th April, 14 were completely cured, and since this period the success has been greater.

Hopital des Enfans.—In Paris, as in every other place, the number of children attacked has been inconsiderable. At the Hotel-Dieu, to which the first patients, without distinction of age or sex, were brought, they received only 16, 10 boys and 6 girls, and only two were about 5 or 6. At the ENFANS MALADES, on the 18th April, the number of choleric cases amounted only to 87, 40 boys and 47 girls. The total deaths were 43, and the majority of these children were from 4 to 5 years or more. At this time of life, as in old age, reaction is not established, and *asphyxia* quickly cuts off the patients. Among the children above 7 or 8, the deaths are in the ratio of 1 in 3. In these subjects much is to be dreaded from the effect of cerebral congestion, which is speedily fatal.

M. Guersent employs in the chill period revellents to the skin, and stimulants internally; during reaction he applies leeches to the epigastrium, or behind the ears, emollient cataplasms and mild liquids for drink. Against typhoid symptoms, if they subsequently appeared, he gave *cinchona*, claret or Alicant wine, and blisters to the nape of the neck, or the occipital region.

MM. Jadelot, Baudelocque, and Bouneau, to each of whom one of the divisions of this hospital was intrusted, employed analogous means, and also used ipecacuana, calomel, the boric acid, &c.

Between the 6th and the 13th of April inclusive, 45 choleric cases were brought to the HOPITAL DES VENERIENS, and under the care of M. Ricord, who ordered frictions along the spine with a very volatile liniment, the cramps were almost always allayed. None of the patients of this hospital under the actual use of mercurial frictions were attacked by *cholera*, and it was even remarked that few persons labouring under syphilis were overtaken by the disease; and, though several facts disprove the preservative influence of the latter power, it may subsequently become a subject of inquiry to what extent these conditions protect from the choleric invasion. M. Velpeau also employed mercurial frictions from the commencement of the epidemic. M. Jules Guerin, having observed that all the workmen employed in the preparations of mercury were exempt from cholera, thought that the mineral might be advantageously employed in curing the disease; and, with the view of enabling it to operate, he proposes previously to administer ipecacuan, in order to effect a reaction favourable to its influence. Mercurial friction on this principle has been followed by favourable results in cases apparently desperate. But these are too few and too vague to justify much confidence.

At the Hopital-Necker, MM. Bricheteau and Delarroque treated many patients from the adjoining districts; and many cases were supplied by the Gros-Caillou, Vaugirard, Grenelle, and Mount Parnassus. In these populous districts it must be further observed, the women were attacked in much greater numbers than the men; and the admissions at the Necker presented this difference from all the other hospitals. On the 15th of April the patients admitted since the commencement of the epidemic amounted to 236, of whom 150 had died. The treatment was founded on the particular symptoms of each patient. The physicians of this institution believe, that, do what you will, it is extremely difficult to obtain any success when the cholera patient is in the blue period, and that all means, even the most energetic, possess little efficacy. The use of the antiphlogistic method above all they found pernicious at this period; and, on the whole, the diffusible stimulants were attended with less inconvenience. This opinion, coming from practitioners so respectable, we willingly record.

The VAL DE GRACE and GROS CAILLOU, under the immediate influence of M. Broussais, have had numerous patients; but it is difficult to obtain accurate statements. The *incendiary treatment* of most of the hospital physicians sufficiently explains, according to M. Broussais, the amount of deaths in their department. The pre-eminent antiphlogistic method, practised with all the vigour of its inventor, ought to have saved all the cases; but this was not the result. We know not with certainty how many cases the garrison of Paris furnished to these military hospitals; but it is certain, that, on the 15th April, the number of deaths amounted between the two to 505. This number is official, and is found in the work of M. Taboureau entrusted with the returns of the deaths.

Now it is certain, that on the 9th April M. Broussais had not cured a single patient from the beginning of the epidemic; and it is equally certain, that of 189 cases of cholera received at the Val de Grace, 36 had died; and yet it was eagerly announced in the journals, that the cures were prompt and numerous. The result shows how much these pompous promises ought to be modified. The soldiers, nevertheless, are all young and vigorous, all in favourable hygienic conditions, all attended from the appearance of the first symptoms; circumstances which are nowhere else met in the same degree, and afford so many chances in favour of treatment. How then can the unfavourable result be explained? Whence proceeds it, that the intense *gastro-enteritis* or *gastro-cephalitis* of the soldiers does not yield to numerous leeches, to copious blood-lettings, and to the soothing remedies so liberally prescribed? M. Broussais does not cause his patients to drink, but allows them fragments of ice to melt in the mouth; he employs astringents and laudanum internally in clyster, and sometimes, though more rarely, in draught. He further employs external means to restore heat, vapour-baths, aromatic fumigations, hot dry friction, hot cataplasms and sinapisms. Such is the treatment pursued by M. Broussais; yet, as we have seen, not only are its results not more favourable than those of the other physicians, but, all allowances made, they appear to have been less so.

General Summary.—In conclusion, from the 1st of April to the 18th inclusive, 6094 cholera patients have been admitted into the hospitals of Paris; 3673 have died; 1594 have gone out, or are fully convalescent; and 837 remain under treatment. On this body of facts are founded the outlines of the historical report which we have now made. In the midst of this multitude of individual varieties, it was requisite to catch the great features of this dreadful malady, which relentlessly claims so great a number of victims. We shall not be astonished at the multitude of different prescriptions, at methods of treatment so opposite; and it must be remembered, that, so far as the practitioners of this country were concerned, every thing was yet to be done. Notwithstanding the immense number of works, of memoirs, and of researches made on cholera,—notwithstanding the daily publications of the therapeutical principles of the German universities, we had to observe with our own eyes, and to acquire personal knowledge of the disease. The medical opinions disseminated in France differ entirely from those which prevail in the north of Europe. Our therapeutic system is totally different; and it was necessary to study the symptoms of the disorder to know which mode ought to be preferred, and when the moment for decision arrived, the first data were yet to be acquired.

Meanwhile that this preliminary inquiry is completed, we may endeavour to recapitulate the chief points of this difficult subject.

From the 26th March to the 20th April inclusive, 10,476 cholera patients died in Paris; and calculating according to the ordinary estimates, we may say that 30,000 persons have been attacked by this disease in variable degrees. This number would be much too small, if we proposed to specify all those who have experienced symptoms depending evidently on the epidemic cause which has for three weeks been operating on the whole body of the Parisian population. The frequency of these symptoms may be inferred from the fact, that in a regiment of dragoons quartered in the district of Petit-Musc, near the Arsenal, 900 men have been attacked with *cholerina** in variable degrees, whereas 30 men only had genuine *cholera*, and of these one-third died. In the same manner, then, a great part of the inhabitants of Paris have been attacked with diarrhœa, *borborygmi*, cramps of the stomach, debility, and pains of the legs, followed by a degree of feebleness similar to that which is observed in the convalescence from typhoid fevers. Genuine cholera, however, is the present subject of attention.

Arriving at Paris by a very cold dry north wind, this disease first attacked the filthiest, the poorest, and the most populous districts; and among the melancholy occupants of these narrow and dirty lanes, it raged among men exhausted by misery, debauchery, and privations of every description. The researches made at the Observatory to determine the barometrical, hygrometrical, and thermometrical variations, afforded no positive results ; and till we have more ample documents, we must renounce the hope of finding satisfactory causes in these general physical dispositions of the surrounding atmosphere.

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* *Cholerina* is the name employed by the Parisian physicians to denote in one word choleroid diarrhœa.

Proceeding from these populous and insalubrious districts, the epidemic ravaged successively all the others; and those which are distinguished by the beauty of their position, the luxury of the mansions, and the wealth of the inhabitants were in no degree spared, and paid the usual tribute to the malady. We shall not, however, dwell longer on these points of the history of the epidemic. Our object is to describe the disease considered as a species,—to indicate distinctly its different aspects and its principal symptoms, to facilitate its diagnosis—and to examine the most advantageous treatment.

First Degree. The patient in the previous enjoyment of good health is attacked with diarrhœa, supervening sometimes suddenly and copiously, sometimes slowly and gradually. There is little colic pain and no *tenesmus.* Shortly after the first liquid stools, a sensation of weakness is felt in the pelvic extremities, which may be either scarcely apparent, or so remarkable as to be inexplicable. With *anorexia* fainting threatens at every muscular effort. Intense superorbital headach comes on, and an inconvenient sense of girding of the head, causing uneasiness from its peculiar character. The patient may, nevertheless, pursue his occupations, and either by energy or indifference these symptoms are neglected ; and this insidious security is most injurious in the greatest number of cases. This state lasts a day or two, sometimes longer, but never exceeds a week, and remarkably enfeebles its subjects. This first degree, which is frequent, is easily managed. The *second degree* is distinguished by cramps of the limbs and vomitings, which is, *first,* the contents of the stomach, then bilious matters, then serous fluids, then flocculent matter intermingled, giving the fluid the look of a decoction of rice or of oatmeal. The stools in like manner at first consistent, become soon liquid, bilious, and serous or sero-mucous with flocculent matter, and so similar that it is difficult to distinguish the gastric from the intestinal discharges. They have also a peculiar odour, acid, but nauseous, faint, sweet, and immediately perceptible, analogous in some degree with the vapour of iodine or chlorine. As the sweat exhales a similar vapour, it might be employed in the absence of other symptoms in establishing the diagnosis. The vomitings are accompanied or followed by cramps occupying successively the feet, the hands, the legs, the fore-arms, and the whole length of the pelvic and thoracic extremities. They even attack the trunk, irritating *pleurodyne* or peritonitic pain, and especially a *lumbago.* The more violent and general they are, the more is the cause of the disease to be dreaded, and the exceptions to this rule are of infinite rarity. The pulse becomes rapid, from 120 to 130 beats in the minute ; the extremities become cold, and the arteries lose their natural tension, so that the blood scarcely distends these walls. The secreting functions are suspended or suppressed, respiration is laborious, sometimes small, sometimes more rapid, but always with a sense of suffocation or constriction at the base of the chest. The patient is restless, agitated, and impressed with the belief that he is dying. The face is extenuated and lengthened, the eyes excited, and the tongue doughy. The intestinal functions are unaffected.

The *third or blue period* is distinguished by a remarkable blue or violescent colour of the face and extremities. The anxiety of the previous stage is followed by extreme depression, failure of the pulse, deep retarded breathing, coldness of the breath, and successive weakening of the voice till it becomes a mere whisper. The cramps diminish in force and frequency, the discharges abate in quantity, the skin is bathed in a cold clammy sweat, and with a general expression of listlessness and apathy, the countenance, shrunk and puckered, assumes a cadaverous look, and the extremities are already as stiff as those of a corpse. In this period the patient expires without convulsion or apparent pain, and often without being perceived by the bye-standers.

If this event does not take place, *the fourth period* may succeed, either by reaction taking place, as it sometimes does spontaneously, or the patient is left to his own powers, or may be at least promoted by art. The pulse, recovering a little strength, returns at the extremities, the cold ceases, the skin parts with its violet tint, the voice becomes more sonorous and natural, the tongue and breath becomes warm, and respiration recovers its frequency and facility. At this stage of the process, hiccup occasionally takes place, as if the diaphragm experienced difficulty in performing its functions regularly. Though neither diarrhœa, nor vomiting, nor cramp, be present, the blood in its returning motion is very liable to produce congestions in particular organs, especially in the brain, where its order is indicated by flushing of the face, delirium, and coma, proving rapidly fatal. In more favourable cases the nocturnal movement is re-established, and the cure is soon certain.

Treatment.—Whatever may be said of the existence of *gastro-enteritis*, or *gastro-cephalitis*, it is certain that in many cases even the most severe, we find absolutely nothing preternatural in the whole digestive tube. Sometimes the small intestine presents a multitude of isolated follicles sufficiently prominent, and circumscribed patches developed to the same extent as we find them in the middle of the course of the ordinary typhoid affections. In some rarer cases, we find marks of gangrene of the mucous membrane,—black specks emitting a manifest gangrenous odour. Of this change, MM. Renauldin, Martin Solon, Andral, and Louis, met several instances. But it appears not less true that these cases form entirely exceptions, and that they cannot serve as the basis of any idea, in the slightest degree well-founded, on the etiology of the disease.

A more positive phenomenon is that of the change of the blood;—an alteration so considerable, that the proportion of free carbon is doubled; that of the colouring matter four times more considerable than in health; the water, albumen,* and fibrin almost gone,—giving the tarry consistence already mentioned. If this point, which is very evidently the essential circumstance, serves as a basis to the etiology, and consequently to the therapeutic method, the question then is, what relation subsists between the morbid state to be removed, and the remedies employed for that purpose.

In the first degree, when the digestive tube appears to be the principal point of fluxion, it is indispensable to oppose this congestion, which exists at the expence of the rest of the organic economy. Local bleeding and emollient or anodyne clysters are consequently indicated. Some practitioners employ another method; and by administering ipecacuan, produce thus a sudden motion in the whole tract of the canal. This shock has been salutary in many cases; but we ought not to conceal the fact, that in others it appears to have produced fatal effects.

In the second stage the internal congestion is more considerable, and already interrupts the progress of many functions; and the necessity of opposing it rapidly increases. Blood-letting may still be resorted to if the pulse resists and the individual is vigorous; and then it is requisite to administer anti-spasmodics, and hypnotics capable of arresting the progress of the nervous disorder, which is now conjoined with these other symptoms. Iced drinks, and ice in mass form good means of allaying vomiting; clysters strongly astringent also succeed in checking the diarrhœa and preventing that exhaustion which so rapidly succeeds the fluids thus discharged. In this case also, ipecacuan appears to have produced good results, by restoring natural secretions in place of those excited by the preternatural stimulus. Under the influence of this emetic, bile has been observed to flow abundantly, the white matter of the dejections to diminish and quickly disappear, the urine to flow, and the cramps to subside.

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* This is very uncertain. Some experiments show rather that the proportion of albumen, if not increased, is not diminished. None prove its absence.

In the third degree a new order of phenomena rules all the rest. The cold extremities, languishing respiration, and failure of the heart's action, indicate the most complete perversion of the functions of the organs. Even in supposing that under the influence of the two first degrees some portions of the intestinal mucous membrane may have become the seat of slight *phlogosis*, would it follow that this inflammation should demand all the attention of the practitioner, when life is almost extinct, and the motions of the principal organs are in the act of ceasing? Certainly not; and, accordingly, the abstraction of a small quantity of blood is at least useless, since the impulse of the heart is almost gone, and the quantity of fluid is remarkably diminished. It is requisite then, to operate on organs capable of still obeying the action which it is wished to produce; and in this case the stomach is one of the points of the economy which offers easy access. The diffusible stimulants, as ether, ammonia, &c. then produce salutary effects, and afford some chances of safety in favour of the dying. In this period still, has an emetic been administered, and the region of the spinal chord been powerfully stimulated. These two measures have restored the nervous influence, when life nearly gone has returned, and reaction has been established. It is easy to conceive that a multitude of analogous means are equally capable of producing this result, so important to be obtained. Practitioners will choose amidst the multiplicity of prescriptions indicated. But we must not disguise the fact, that few chances are left by this degree of the disorder.

Reaction once obtained, the object is to watch its progress, and to oppose the accidents which it occasions, when not confined within due limits. The convalescence of choleric cases is tedious and painful, and requires the most vigilant attention on the part of the physician, and great docility on that of the patient. It is unfortunately too true that a large number of choleric cases cured, but too soon left to themselves, have found in errors of regimen the source of new symptoms rapidly fatal. The extreme debility which succeeds the enormous losses sustained by the economy in this singular disorder predisposes to severe organic lesions; the slightest pneumonia becomes immediately mortal; the most trifling gastric irritation immediately recals the whole train of typhoid affections; and the patients sink the more quickly, as the appropriate mode of treatment in cases of this class can no longer be employed for these patients so much exhausted.

Cholera Official Report by the Board of Health, Glasgow.

	Feb. 13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Remaining last report, -	0	1	1	4	8	6	13	14	17	18	23	28	26	23	36	35	29
New cases, -	3	2	4	7	2	19	6	11	6	14	24	8	14	22	9	7	16
Recovered, -	0	0	0	0	1	12	2	3	1	5	8	2	9	7	2	8	10
Died, - -	2	2	1	3	3	0	3	5	4	4	11	8	8	2	8	5	5
Remaining, -	1	1	4	8	6	13	14	17	18	23	28	26	23	36	35	29	30
Total cases since Feb. 13, -	3	5	9	10	18	37	43	54	60	74	98	106	120	142	151	158	174
Do. cured, -	0	0	0	0	1	13	15	18	19	24	32	34	43	50	52	60	70
Do. died, -	2	4	5	8	11	11	14	19	23	27	38	46	54	56	64	69	74
Do. remain, -	1	1	4	8	6	13	14	17	18	23	28	26	23	36	35	29	30

March	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Remaining last report,	30	28	26	25	24	26	27	28	25	23	27	19	26	28	20	18
New cases,	10	10	8	5	14	9	16	13	14	12	7	19	10	3	8	13
Recovered,	4	10	4	1	6	5	2	5	4	1	7	9	0	8	2	4
Died,	8	2	5	5	6	3	13	11	12	7	8	3	8	3	8	3
Remaining,	28	26	25	24	26	27	28	25	23	27	19	26	28	20	18	24
Total cases since Feb. 13,	184	194	202	207	221	230	246	259	273	285	292	311	321	324	332	345
Do. cured,	74	84	88	89	95	100	102	107	111	112	119	128	128	136	138	142
Do. died,	82	84	89	94	100	103	116	127	139	146	154	157	165	168	176	179
Do remain,	28	26	25	24	26	27	28	25	23	27	19	26	28	20	18	24

March	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Remaining last report, -	24	23	28	32	31	42	52	45	48	63	68	58	59	55	48
New cases,	12	15	15	14	22	29	9	18	33	22	20	16	21	18	12
Recovered, -	3	1	7	5	6	9	7	7	10	8	15	10	16	15	6
Died, -	10	9	4	10	5	10	9	8	8	9	15	5	9	10	12
Remaining,	23	28	32	31	42	52	45	48	63	68	58	59	55	48	42
Total cases since Feb. 13,	357	372	387	401	423	452	461	479	512	534	554	570	591	609	621
Do. cured, -	145	146	153	158	164	173	180	187	197	205	276	230	246	261	267
Do. died, -	189	198	202	212	217	227	236	244	252	261	220	281	290	300	312
Do. remain,	23	28	32	31	42	52	45	48	63	68	58	59	55	48	42

April	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Remaining last report, -	42	36	38	42	44	41	42	38	41	43	42	36	35	45	39
New cases, -	10	16	18	13	11	10	11	14	8	10	7	7	17	9	13
Recovered, -	7	9	6	5	4	6	6	5	1	7	8	5	2	10	2
Died, -	9	5	8	6	10	3	9	6	5	4	5	3	5	5	10
Remaining, -	36	38	42	44	41	42	35	41	43	42	36	35	45	39	40
Total cases since Feb. 13,	631	647	665	678	689	699	710	724	792	749	749	756	773	782	795
Do. cured, -	274	283	289	294	298	304	310	315	316	323	331	336	338	348	350
Do. died, -	321	326	633	340	350	353	362	365	373	377	382	385	390	395	405
Do. remain,	36	36	42	44	41	42									

April	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Remaining last report, -	40	38	39	42	35	34	40	38	31	26	24	20	19	21	18
New cases, -	12	21	17	8	16	13	12	5	10	10	8	5	4	4	4
Recovered,	5	12	5	8	10	4	7	7	5	7	5	2	2	3	3
Died, -	9	8	9	7	7	3	7	5	10	5	7	4	0	4	3
Remaining,	38	39	42	35	35	40	38	31	26	24	20	19	21	18	16
Total cases, since Feb. 13,	807	828	845	853	869	882	894	899	909	919	927	932	936	940	944
Do. cured, -	355	367	372	380	390	394	401	408	413	420	425	427	429	432	435
Do. died, -	414	423	431	438	445	448	455	460	470	475	482	486	486	490	493

May	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Remaining last report,	16	14	12	14	14	18	19	23	25	21	23	20	22	23
New cases,	4	5	7	12	10	5	7	6	6	3	3	5	11	4
Recovered,	4	3	0	3	2	0	1	2	5	0	2	3	3	3
Died, -	2	4	5	9	4	4	2	2	5	1	4	0	7	3
Remaining,	14	12	14	14	18	19	23	25	21	23	20	22	23	21
Total since Feb. 13, -	948	953	960	972	982	987	994	1000	1006	1009	1012	1017	1028	1032
Do. cured,	439	442	442	445	447	447	448	450	455	455	457	460	463	466
Do. died,	495	499	504	513	517	521	523	525	530	531	535	535	542	545

May	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Remaining, last Report,	21	19	15	16	15	9	10	12	10	7	4	8	9	7
New cases,	2	3	2	5	0	4	5	2	0	1	5	2	1	0
Recovered,	0	4	1	2	2	3	2	0	2	1	1	1	1	0
Died,	4	3	0	4	4	0	1	4	1	3	0	0	2	0
Remaining,	19	15	16	15	9	10	12	10	7	4	8	9	7	0
Total since Feb. 13,	1034	1037	1039	1044	1044	1048	1053	1055	1055	1056	1061	1063	1064	0
Do. cured,	466	470	470	474	476	479	480	484	485	488	488	488	490	0
Do. died,	549	552	553	555	559	559	561	561	563	564	565	566	567	0

Licentiates of the Royal College of Surgeons Edinburgh, for last six months.

Surgeons' Hall, Edinburgh, 15*th May* 1832.—*Since Martinmas last* the following Gentlemen have offered themselves as Candidates for the *Diploma of the Royal College of Surgeons of Edinburgh,* and after producing satisfactory evidence that they have completed the course of study prescribed by the College, have been admitted to examination, and found fully qualified to practise the arts of *Anatomy, Surgery, and Pharmacy,* and have received Diplomas accordingly.

Of Scotland.
James T. Alexander,
Archibald Gordon,
James Spence,
George Stuart,
Andrew Plummer,
Alexander Harvey,
Robert Macgregor,
William Gibson,
John Murray,
William Henderson,
John Jollie,
John M'Ewen,
William Ewart,
John H. W. Waugh,
Robert Spears Low,
Robert Brown,
Andrew Fergusson,
Alexander Cochrane,
David Keith Ballow,
William Barclay Millar,
John M'Miken,
John Herbertson,
John Stewart,
Robert Bartholomew,
James Hunter,
Francis W. G. Calder,
James Allan,
Alexander Creyk,
David Spence,
John Thomson,
Robert Duncan,
James Robertson,
Thomas Turnbull,
George Lillie Smith,
George C. Mackidd.

From England.
Railton Gill,
Robert Cooper Pawle,
James Henry Evans,
Francis Sibson,
Samuel Wright Fearn,
William A. Tuckey,
Jessop George Hulton,
Samuel Gaskell,
John Burrows,
James Flesher,
John Marshall,
Thomas Leithead,
John Crea,
Thomas T. Peirson.

From Ireland.
Alexander Bruce,
William Sheils,
James Byrne,
John Leader,
David Scott,
John Flyn,
Joseph M'Cutchen,
James Davis,
James Seaton Reid,
Smith Dickson,
John Orr,
James O'Grady,
William Lloyd Powell.

Isle of Man.
John T. S. Lyell.

From Abroad.
James Bell Johnston,
Jacob Dickson Hunter.

Extracted from the Records of the Royal College by
(Signed) Wm. Scott, *Secy.*

Report on the Fort Pitt Museum and Collections.

Thatched House Tavern, 16*th May* 1382.

At the Seventeenth Annual Meeting of the Medical Officers of the Army, an account of the present state of their Library, Museum of Natural History, Museum of Anatomy, and of the Records, was laid before them by the Chairman and Secretary.

During the last year, it appears that the additions made to the Museum of Natural History have been very considerable; many of them splendid, and several of great value. The skeleton of the crocodile is perhaps the most perfect and splendid in any collection in the world; it is the gift of Mr Sandham, of the 11th Dragoons.

In the			
Mammalia,	10	specimens have been added, making a total of	
Birds,	349	- - - - - -	661

Reptiles,	120	352
Fishes,	28	55
Testacea,	2	56
Insects,	392	1540
Zoophytes,	2	8
Total,	903	2718

In the Vegetable Kingdom, 4177 specimens have been added, making a total of 4520 in our Collection in Botany.

In the Mineral Kingdom, 481 specimens have been added, making a total of 2599 specimens in our Mineralogical Collection.

Not less valuable have been the additions made to our Anatomical Museum.

Natural Human Anatomy—
62 preparations have been added, making a total of 417

Morbid Anatomy	158	1249
Comparative,	236	360
Total,	456	2026
Drawings,	6	108
Paintings,	0	19
Casts,	7	46
Specimens in the rude state,	93	93
	106	266

The principal contributors to the Museum have been Major-General Sir Lewis Grant; Dr Burke, Inspector-General of Hospitals; Dr Davy, Assistant Inspector of Hospitals; Dr Roe, 7th Dragoon Guards; Dr Farquhar M'Crea; Dr M'Andrew, 14th Regiment; Mr Leslie, 45th; Mr Dartnell, 41st; Dr Sandham, 11th Dragoons; Mr Ford, 72d; Mr Bacon, Hon. East India Company's Service; Captain Squire, 13th Dragoons; Dr Portelli; Mr Smith, Assistant Staff-Surgeon, Cape of Good Hope; Surgeon Thomas, Ordnance; Dr Baxter; Dr Strahan; Mr Burton; Mr Jemmett, Dr Alexander; Mr Armstrong; Mr Stevenson, 89th; Sir James M'Grigor; Dr Mouat; Dr Henderson, 48th; Mr Fiddes, 85th, &c. &c.

Valuable as both the collections are in the opinions of natural historians and anatomists, there are still blanks in each, which it is most desirable should be filled up as soon as possible, and which it is hoped will be filled up by the liberality of members or of their friends.

DESIDERATA IN THE MUSEUM, FORT PITT, CHATHAM.

Natural History Branch.

The *Crania* of Animals.

The Collection of foreign Birds contains but few specimens from South America, and the Windward and Leeward Islands, and is entirely destitute of any from Jamaica, and from Ceylon.

Among the Reptilia, there scarcely are any Turtles, or foreign Toads. The fine Collection of Lizards may be further enriched from foreign stations, particularly from Jamaica and Ceylon (from which there are no specimens,) and also from the Mediterranean.

The Museum contains few Fishes.

There is a general deficiency of the Invertebral Classes.

Specimens in Conchology, and the various genera of Crabs, would prove a valuable addition.

Drawings of specimens in any branch of Natural History, as well as of plants, would be a great acquisition.

Pathological and Anatomical Branch.

Injuries and Malformations of the Bones.
Diseased Structure of the Brain and Membranes.
Malformations of the Heart.
Aneurisms of the small Arteries.
Herniæ of all descriptions.
Tumours of all classes.
Scirrhus and Cancer.
Urinary Calculi.
Diseases of the Male Organs of Generation.
Ditto of the Female Organs, and particularly of the Uterus.
Diseased parts from Children.
The *Fœtus* at different periods.
Malformation of the *Fœtus*.
Casts, Drawings, and Paintings, in Natural and in Healthy Anatomy.

It is well known, that for the *Library* there are no established or regular funds, and that for its support it is entirely dependent on the liberality of the officers of the department, and an appeal to them has not been made in vain; for, during the last year, the Library Committee have been enabled to purchase some valuable works of reference, to bind most of the works, and to fit up the library.

During the past year, 140 volumes and 40 pamphlets have been added to the library, making a total of 1934 volumes, besides pamphlets.

The following donations in money have been received during the year:

From	Dr Donald M'Leod, Deputy Inspector-General,	20	0	0*	
	Dr Burke, Inspector-General, - -	10	10	0†	
	Dr J. Macgregor Malloch, Surgeon 46th, -	10	0	0‡	
	Dr Murray, Deputy Inspector-General, -	3	3	0	§
	Dr Kenny, Surgeon 12th Lancers, (3d donation,)	2	0	0	
	Dr Divir, Surgeon 91st Regiment, (2d donation,)	1	1	0	
	Assist.-Surg. Cavet, 97th Regt. (2d donation,)	1	1	0	
	G. M'Dermott, Esq. Surgeon to the Forces, -	1	0	0	
	The Rev. George Clark, Military Asylum, -	5	5	0	
		L. 54	0	0	

There remains a balance of about six pounds, which has been appropriated for the further purchase of standard professional works.

The following Works will be highly acceptable, being much wanted to complete those in the Library, viz. the first five volumes, and the 9th, 10th and 11th volumes of the Asiatic Researches, quarto, Calcutta Edition. The first eleven volumes of the Linnæan Transactions. The first fourteen volumes of the Quarterly Review, and the first ten volumes of Dr Brewster's and Professor Jameson's Edinburgh Philosophical Journal.

The following Authors have presented their Works during the Year:—Sir Henry Halford, Bart.; Sir Gilbert Blane, Bart.; Dr Knox, Edinburgh; W. F. Ferguson, Esq.: R. Orton, Esq.; Dr Macmichael; Dr J. Walker, Bombay Establishment; Dr Alexander Monro, Edinburgh; Dr Thomas Molison; J. V. Thompson, Deputy-Inspector General; Dr John Webster; Assistant Surgeon S. Dickson; Royals; Dr Thomson, Edinburgh.

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* With which has been purchased Alibert's great work on Diseases of the Skin, &c.

† Purchased Buffon's Natural History, 20 vols.

‡ Purchased Vicq-d'Azyr, Anatomie et Physiologie, et Scarpa Tab. Neurologicæ.

§ Purchased Andral's Pathological Anatomy, Monro on Bursa Mucosa, Combe on Insanity, Paris on Diet, and other works.

The Royal College of Surgeons, London, have presented some additional parts of their Catalogue.

And Donations of Books have been made by many officers during the year; the most considerable by the under-mentioned gentlemen:—Dr Strachan, Inspector-General; Dr Cope, Field-Inspector; Staff-Surgeon Burton; Surgeon Roe, 7th Dragoon Guards; F. Foster, Esq. Surgeon, H. P. 56th Regiment; Assistant-Surgeon S. Dickson, Royals; Assistant-Surgeon Bell, 81st Regiment; Sir James M'Grigor; Staff-Assistant Surgeons Dr Tuthill, Dr Caw, H. N. Holden, and E. J. Bulteel; Assistant-Surgeon Dr Clark, 13th Dragoons; Madras Medical Board; and Surgeon Fiddes, 85th Regiment.

To render the Museum and Library thoroughly useful, to inform every member of the department of the contents of both, and to enable those who desire it to consult either. printed catalogues are absolutely necessary. These catalogues must be full and descriptive; and all particulars, with the names of Donors, &c. should be given. There are no means of accomplishing this necessary work, which will render useful the library and museum, but by subscription among the officers of the department; and it cannot be doubted, but that the liberality which has already effected so much for these institutions, and brought the library and museum to their present very respectable state, will now accomplish this object.

The additions made to the valuable *Records*, under Dr Gordon, in the year, have been of great value and extent; and, as is well known, these are open to the profession at large. They now are—

1.	Historical Monthly Reports, from 1816 to May 1832,	6 Fol. Vols.
2.	Annual Returns and Reports, from 1816 to May 1832,	134
3.	Histories of Epidemic Diseases, being Replies to Queries,	2
4.	Topography, with Maps. - - -	6
	Also several Maps unbound.	
5.	Valuable Papers on the Syphilitic Question, -	1
6.	Abstract of the Quarterly and Monthly Sick Returns, at Home and Abroad, from 1816 to May 1832, -	3
7.	Reports, &c. on Cholera, - - -	1
8.	A large Collection of Cases of particular Diseases, with *post-mortem* appearances.	

The deaths, during the year, of many old and respectable members of the department, while it excited the sympathy and condolence of the Meeting, elicited the expression of regret that no Biographical Notice was offered by any of their Friends.

Before the Meeting separated, Thanks were unanimously voted to Dr Clark, to the Committee of the Museum, the Library Committee, and to Dr Gordon.

While we insert the preceding document with the view of drawing the attention of the profession, military and civil, to the desiderata in the Fort Pitt Museum, and the claims which it has on their attention and support for contributing such supplies as their opportunities may enable them to procure, we embrace the present opportunity of directing the attention of the profession at large, and of all those who are interested in the progress of science, to the varied and extensive collection of manuscript records now acquired. These records must now comprehend a great number of valuable and instructive documents, illustrative of medical topography and statistics; the rise, progress, and decline of epidemics; and the prevalence of endemic diseases. While no one can doubt that the Director-General and the Secretary have very great merit in commencing, continuing, and enlarging this collection, we must say that in its present state it is almost entirely useless and unprofitable. That they are open to the profession at large, is of little avail so long as they are in manuscript. Manuscript folios cannot be conveyed to the Mediterranean, to the coast of Africa, to the East and West Indies, or the shores of the Pacific. The only way to make their contents available, is to publish at least selections; and there is no doubt that, of a mass of papers so copious, so varied, and collected from sources so numerous and remote, there must be many which would doubtless merit this distinction, and would justify publication. It is certainly singular, that, with the extensive naval and military establishments which we possess under the Pole and on the Tropics, in the east and in the West, in the Atlantic and Pacific, no attempt has been yet made to render those establishments nationally serviceable to the promotion and diffusion of medical knowledge. The surgeons of the East India Company's Service have set an excellent example, in effacing the charge of indolence so often brought against them. The army surgeons have also, in all parts of the globe, shown both the desire and the capacity to collect and communicate information. But so long as the results of their labours and experience are confined to the walls of a library, in a manuscript shape, it is manifest that but a small proportion of the profession can possibly know any thing of their contents. Indiscriminate publications we by no means recommend. But it is clear, that, if they are to be generally useful at all, or even if worth consultation, some should be published. Selection, and scrupulous judicious selection must be the ruling principle. It would reflect the highest credit on the Director-General, and add to the services he has rendered, if he would make arrangements for laying some of the most valuable of these documents before the world; and, as we have elsewhere said, some of the accomplished medical officers in the vicinity of London might be readily induced to lend their aid in selecting the materials, and arranging the details of publication. A memorial such as that of Hautesierck in France, would be to a commercial nation like us the most valuable record that could be imagined, and would constitute a body of information and a source of authority in all questions regarding medical topography, statistics, etiology, and many of the most important questions of state and military medicine, unrivalled in this country, and perhaps in any other.

Spontaneous Amputation of the Limbs of the Fœtus in Utero, by Dr W. F. Montgomery. (From the Dublin Journal of Medicine and Chemical Science, No. ii. p. 140.*)*—The removal of portions of the limbs in the fœtus has been reported by several authors, among others, Hildanus, Plot in his history of Staffordshire, Turner in his Cutaneous Diseases, (Chap. xii. p. 176,) Kundham, Schook, Hebenstreit, and more recently by Desormeaux, Billard, Chaussier, and Wilkinson. By the former authors, and by ancient observers in general, this mutilation was absurdly ascribed to the force of imagination. The moderns have satisfied themselves with observing the fact, without speculating on its cause. Dr Montgomery, however, has recorded in the journal now mentioned a case which seems to explain the process in a satisfactory manner.

About three years ago, Dr Montgomery was suddenly requested to see a woman with symptoms of miscarriage and violent hemorrhage in the fifth month. The fœtus was lying partly expelled from the *uterus*, from which it was easily removed by slight pressure. The cord was broke off about an inch and a-half from the navel; the secundines, after being retained from three to four days without return of hemorrhage, were expelled spontaneously; and the patient recovered well.

The head was monstrous and deformed; and the brain, covered only by integuments, rose like a helmet. But the remarkable circumstance was, that of several cords or ligaments enclosing the limbs. These were threads, which Dr Montgomery believes to be organized lymph, passing from both hands to the legs. At one end these threads, which resembled the thread named *ardis*, had formed a complete ligature, enclosing the middle of each hand, forming a distinct depression, and with the effect of rendering the portion of extremity below small, shrunk, and undergrown. From the hands these threads descended on both sides to the legs, which were crossed, and enclosed them in this position above the ankles so tightly, that two-thirds of their substance was divided, without breach of the skin, however, or discoloration or disorganization of the parts, but rendering the portions below the ligature shrunk and undeveloped, as in the case of the hands.

From the condition of the limbs thus produced, and the impossibility of the growth of the parts below the ligature continuing, Dr Montgomery thinks it probable that had the child continued to live and grow, the parts below the ligature must have undergone spontaneous amputation.

A figure of these changes is given; and we think it highly probable, that the conjecture is well founded as to the cause of spontaneous amputation in the fœtus. If so, it proves at once the futility of those theories which still ascribe such accidents to the imagination of the mother.

Notice to Students of Medicine.—At the annual business meeting of the Harveian Society of Edinburgh, held this day, it was decided, that as no essays had been given in on the subject advertised last year, the same subject should be continued for the present year, viz.:—" An Experimental Essay on the Curative Properties of Strychnia."

Dissertations on this subject must be transmitted to either of the Secretaries, on or before the 1st day of January 1833. Each dissertation must be accompanied by a sealed letter, containing the name and address of the author, and inscribed on the back with a motto. The same motto must also be prefixed to the dissertation to which the letter belongs.

The prize given by the Society to the successful Candidate, is either a copy of the quarto edition of Dr Harvey's works, published by the College of Physicians of London, or a silver medal, with a suitable inscription, at the option of the Candidate. The prize is presented to the successful Candidate at the annual festival in April.

The Candidate is at liberty to employ his dissertation afterwards in any way he may think proper: And, accordingly, some dissertations presented to the Harveian Society have, in consequence of publication, been productive of considerable honour and emolument to the authors.

By order of the Society

William Moncreiff, M. D., 7, York place, } *Secretaries.*
John Campbell, M. D., 17, Albany Street, }

Edinburgh, 12*th March* 1832.

No. CXIII. will be published on the 1*st of October* 1832.

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THE
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MEDICAL AND SURGICAL JOURNAL.

1. OCTOBER 1832.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*An Inquiry into the Natural History of the Menstrual Function.* By JOHN ROBERTON, Surgeon to the Manchester Lying-in Hospital and Dispensary for the Diseases of Women and Children.

1*st. Of the Age at which Menstruation first takes place.* *

THE age of puberty, as indicated by the eruption of the menstrual secretion, or the age at which the aptitude for generation commences (for the two phenomena are regarded as occurring at the same period) is a point concerning which there exists little or no difference of opinion. Physiologists concur in teaching that the period is not uniform, but that it is influenced by many circumstances, as climate, constitution, and mode of living; that in warm climates it occurs often as early as the eighth or ninth year; in temperate climates is usually postponed to the thirteenth or fourteenth year; and in arctic regions to the nineteenth or twentieth.

This opinion, which is general, appears to me to be in a great measure, if not entirely, erroneous. As the inquiry concerning the age of puberty is, for many reasons, of importance, I offer no apology for entering upon it. Besides, so precarious and unsettled is that department of physiology denominated *experimental*, that any attempt to place the little of the science which depends merely upon *observation* on a surer basis, deserves, even if it prove a failure, to be received with indulgence.

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* A paper, entitled "An Inquiry respecting the age of Puberty in Women," containing views mostly similar to those maintained in this section of the present contribution, was published by me in two successive numbers of the North of England Medical and Surgical Journal—a periodical which ceased on the completion of one volume. In the present paper the subject of female puberty has been carefully reconsidered, and, I trust, satisfactorily discussed.

In exhibiting the sentiments of such as have written on female puberty, I begin with those of Haller, because they have been generally adopted, and also because the notions of the most eminent of his predecessors, on this topic, are so blended with fable as to merit little notice. Even the illustrious Boerhaave has assured us that there are whole nations whose women are destitute of the *catamenia*; and that the Scythian women approach nearly to the nature of the male![*] Haller's opinion is, that in the warm regions of Asia, the *menses* appear from the eighth to the tenth year; in Switzerland, Britain, and other equally temperate regions, at the age of twelve or thirteen; and later, the further we ascend towards the north.[†] The same view is taken by Dr Denman, which he expresses thus, "The early or late appearance of the *menses* may depend upon the climate, the constitution, the delicacy or hardness of living, and upon the manners of those with whom young persons converse. There seems to be some analogy between the effects of heat upon fruits and the female constitution with respect to menstruation, for in general the warmer the climate the sooner the menses appear. In Greece and other hot countries, girls begin to menstruate at eight, nine, and ten years of age; but advancing to the northern climates, there is a gradual protraction of the time, till we come to Lapland, where women do not menstruate till they become of maturer age, and then in small quantities, at long intervals, and sometimes only in the summer."[‡] According to Professor Burns, "the age at which menstruation begins, varies in individuals, and also in different climates. It is a general law, that the warmer the climate the earlier does the discharge take place, and the sooner cease. In Asia, for instance, the menses begin about nine years of age, while in the north a woman does not arrive at puberty till she is eighteen or twenty years of age."[§] According to Dr Herbert Mayo, "women reach the period of puberty one or two years before men; the inhabitants of southern before those of northern climates. In the hottest regions of Africa, Asia, and America, girls arrive at puberty at ten or even at nine years of age. In France, not till thirteen, fourteen, or fifteen, whilst in Sweden, Russia, and Denmark, this period is not attained till from two to three years later."*—"Puberty," says Dr Dewees, the American writer, "must vary, as it may be influenced by climate, constitution, and modes of life, always being earlier in hot than in cold climates," &c. Again, "the average period of the first appearance of the menses may be between the fourteenth and fifteenth year in this country," (North America.) †

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[*] Academical Lectures, Vol. v. page 117.

[†] Elementa Physiol. Tom. vii. pars ii. p. 140.

[‡] Denman's Midwifery, 6th edit. p. 83. 1824.

[§] The Principles of Midwifery, by John Burns, M. D. 7th edit. p. 463. 1828.

We see how unanimous these writers are in asserting, that the warmer the climate the earlier the appearance of the menses, and *vice versa*. This doctrine naturally suggests questions, the solution of which they have not, so far as I know, attempted. It might be asked, for example, whether, in countries where the *catamenia* flow, as they allege, at the age of nine years, this *sexual* precocity is manifested by the mind equally as by the body? or whether the mind remains, till a later period, infantine? or whether the female, in all her faculties, mental and bodily, exhibits this early developement? What physiologists have declined attempting, Montesquieu has fearlessly performed. "Women in hot climates," says this great philosopher, "are marriageable at eight, nine, or ten years of age. Thus, in these countries, infancy and marriage almost always go together. They are old at twenty. Their reason, therefore, never accompanies their beauty. When beauty demands the empire, the want of reason forbids the claim. When reason is obtained, beauty is no more. The women ought then to be in a state of dependence, for reason cannot procure in old age that empire which even youth and beauty could not give. It is therefore extremely natural that, in these places, a man, where no law opposes it, should leave one wife to take another; and that polygamy should be introduced."‡

If these premises be only granted, that the women of warm climates are generally "marriageable at eight, nine, or ten years of age," and the writer has undoubtedly the authority of physiologists for the fact, it is not easy to perceive, on grounds merely philosophical, what objection can be taken either to the reasoning or the conclusions. One other inference his hypothesis necessarily involves. It is one that cannot fail to be highly encouraging to the friends of arctic civilization, (if they admit its correctness,) as it generously promises the ultimate supremacy in rank, among their sex, to the women of the frigid climate of Labrador and Greenland. Instead of arriving at maturity at the infantile age of tropical, or the somewhat more mature age of European girls, *they* of course are not even marriageable till nineteen or twenty,—a period when the mind and body are both fully expanded,—and therefore sure, when they become civilized, to possess, in the most eminent degree, all those elegant and solid accomplishments which southern women never attain, till long after puberty, when beauty is already on the wane.

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* Outlines of Human Physiology, by H. Mayo, 2d edit. p. 463. 1829.

† A System of Midwifery, by W. P. Dewees, M. D. p. 45. and 131. See also Bostock's Physiology, Vol. iii. p. 46. and Skinner's Compend. of Midwifery, by the late Dr Gooch, p. 6. 1831, where the same opinions are fully and explicitly stated.

‡ Montesquieu's Spirit of Laws, (E. T.) Vol. i. Book 16th.

Having thus presented the opinions of our standard writers concerning female puberty, of those at least whose works are most frequently appealed to, I forbear to multiply quotations. It now remains for me to state the views (differing essentially from these) which I have been led to entertain on this subject.

Many years ago I was consulted in the case of two sisters, the one seventeen and the other eighteen years of age, who, though apparently in health, were supposed to be suffering from retention of the *catamenia*, for which they had been taking some popular herb medicine. They were both tall, more than commonly muscular, of a blooming healthy hue, and without any sign of enlargement of the *mammæ*. In other respects, their appearance was perfectly feminine. Finding they had no symptom of disease, I recommended that they should desist from medicine; on the ground that, in all probability, they had not yet arrived at puberty, although in age they had certainly passed what is considered to be its usual period. Instances of an opposite kind afterwards came under my notice. In one, where a girl menstruated at twelve, her mother and grandmother had, I found, become regular at the same age. In another, five sisters in one family menstruated at the age of eleven. These and similar cases, in no respect morbid, but perfectly in the order of nature, led me to doubt whether the period of puberty was nearly so *uniform* as we are taught in books to consider it. This doubt induced me to institute an investigation of the subject at the Board of the Manchester Lying-in Hospital. The result appears in the following table. The question as to the age of menstruation was put, indiscriminately, to a certain number of pregnant married women on their coming to the hospital, to deliver in their letters of recommendation, as home-patients. These women are generally in health, as appears by their walking, in an advanced stage of gestation, from considerable distances to the hospital; the greater number being inhabitants of our widely extended and scattered suburbs. The circumstance of pregnancy is a proof, as regards the whole of the cases examined, of exemption from serious disease of the generative system. Owing to the very great number of females who resort thither weekly, affording an abundant field for inquiry, no hesitation was felt at rejecting the evidence of all who evinced either a doubtful recollection of the fact in question, or answered with reluctance.* I may therefore affirm, that this table furnishes as accurate data as the nature of such an inquiry allows; and it is to be remembered, that, concerning the catamenial sign of puberty, the word of the woman is, on any extended scale of investigation, the only testimony to be obtained. Should any be of opinion that the facts ought to have been verified by inquiries made in a class of patients more respectable, and hence perhaps more credible, than that which furnishes the applicants to a public hospital,—I am able to say that such has actually been the case.

The following are the ages at which 450 women began to menstruate

In their eleventh year,	10	In their sixteenth year,	76
twelfth,	19	seventeenth,	57
thirteenth,	53	eighteenth,	26
fourteenth,	85	nineteenth,	23
fifteenth,	97	twentieth,	4

One very obvious corollary I would draw from this table, namely, that the natural period of puberty in women of this country, instead of being the fourteenth or fifteenth year, occurs in *a much more extended range of ages, and is much more equally distributed throughout that range*, than authors have alleged. And another, which claims particular attention, is, that, did religion and our social institutions permit and encourage, in England, that early and unrestrained intercourse between the sexes which, with the sanction of both, obtains in many other countries, it is to be presumed that we should occasionally witness instances amongst us of women becoming mothers at as early ages as twelve, thirteen, and fourteen years. That pregnancy may actually take place *even* before the earliest of these periods, the following case, which happened in the practice of Mr Robert Thorpe, serves to prove. Having that gentleman's permission to state the facts, I give them with implicit confidence in their correctness. The case is this,—a girl who worked in a cotton factory became pregnant, as was represented, in her eleventh year. When in labour she was seized with convulsions; but ultimately, without unusual difficulty, was delivered of a full-grown, still-born child. Her recovery was perfectly favourable. I am assured by Mr Thorpe, that he and the late Dr Hardie were at the trouble of examining the registers of this girl's birth and christening, and fully satisfied themselves that she had really conceived in the eleventh year of her age, and that at the time of her delivery she was only a few months advanced in her twelfth year. Mr Thorpe likewise ascertained that she had menstruated before she was pregnant.

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* Perhaps it ought to be stated, that the question relating to the period of puberty was put to each of the women along with other questions usual on the occasion; as concerning the age, the occupation, the number of children, &c. so that it did not appear as if put out of curiosity or for a private end, but as one of the queries necessary to be answered in order to her admission as a patient.

We have seen the geographical scale devised by Baron Haller, and adopted by succeeding writers, for determining the period of female puberty in the torrid, the temperate, and the frigid zones. We have also had evidence how indifferently the scale applies in our own country, which may stand for the temperate zone. We have now to examine if it apply truly in reference to the other two; and first in the Frigid.

It is a common, and, reasoning from analogy, a plausible opinion, that animals and vegetables are in a considerable degree similarly influenced by climate. That in cold regions, where even the pine, that citizen of the world, dwindles to a feathery shrub, man and the other animated beings will be meagre and stunted; that where the hardiest of our fruits and esculents ripen slowly or never ripen, the maturation of animals will be tardy; and that, if we advance higher still, to the *ultima Thule* of modern geography, Melville Island, and to the shores of East Greenland, where the hardiest plants with difficulty find soil and nourishment, there man will exhibit the last degree of imperfect developement, his body scarcely ripening in time to procreate his species before its feeble sensibility ceases in death, if death it may be called, which terminates a torpid existence almost unworthy the name of vital. Thus do we reason from analogy,—a mode of arriving at a conclusion which is a general favourite, and well may be, since, besides carrying with it a fair show of philosophy, it requires little appeal to facts. We shall find, that though cold greatly affects, and in a manner nearly similar, certain animals and vegetables, the same kind of influence from it by no means extends to man and certain other animals and vegetables. A partial view of the phenomena has alone given rise to so much false reasoning on this subject. It is true that within the arctic circle the horse and the cow are mimicked in pigmy forms;[*] and the same may be said of our esculents, and of our forest trees, the oak, the ash, the elm, and even the pine and the birch. The climate at the very margin of this zone causes them to be stunted, and farther northward, wars successfully against their very existence. But we shall err if we imagine, that even *here* nature is without evidence of her power and exhaustless bounty. Many flowers of brilliant hues and stately forms are to be seen which languish under a milder sky. It is here the *Epilobium angustifolium* spreads its magnificent purple blossoms, and the *Pedicularis sceptrum Carolinum* still more loftily displays, tier above tier, its bright and golden flowers. And of fruits, among many which might be enumerated, the cloudberry, *Rubus Chamæmorus*, affords the Laplander as plentiful and delicious a dessert as could be furnished by any of those indigenous to our climate. *

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[*] Clarke's Travels in Scandinavia, Vol. i. p. 309.

In regard to other productions, barley, rye, the rein-deer moss, and the tall arctic grasses thrive luxuriantly. Instead of the horse and the cow, the Laplander has the rein-deer, more than a substitute for both ; and in the place of our poultry and game, the splendid cock of the woods, the beautiful ptarmigan, the white partridge, and innumerable water-fowl. In tracts still more inhospitable than Lapland, the northern regions of Greenland and America, where the larger vegetables wholly disappear, enough of shrubs and grasses remain to attract several of the graminivorous quadrupeds, and, so far are these, and the carnivorous animals from appearing stunted and feeble, that the rein-deer, the moose, and the musk ox, the wolf, the white bear, and the dog, in size, strength, and spirit, equal or surpass the animals of other regions. And where the shores are heaped with icebergs forming, as might seem, the last refuge of sterility, amphibious animals people every slope and furnish sustenance for man and the other *carnivora*. Hence it is evident, that geniality, as applied to climate, has a relative meaning only, and that plenty of food is all which is absolutely necessary, even in the polar islands, to the perfection of, at least, the fiercest and largest quadrupeds.

That this remark applies equally with reference to man will be disputed. The most northerly Finlanders, Swedes, and Norwegians, are confessedly of large stature : about these, therefore, there is no dispute. It is the Laplanders, the Esquimaux, and the tribes of northern Asia, which are generally supposed to illustrate the influence of cold on the sensibility and expansion of the human frame. Admitting the comparatively diminutive forms of these races, it may first of all be observed, that some of them, the Esquimaux on the Labrador coast, for example, belong to a more temperate and southerly climate than many of the taller Indians ; and the same remark applies to the inhabitants of the higher parts of West Bothnia, where the gigantic Swede and the pigmy Laplander are found in the same latitude. If, therefore, cold affect the stature, it must operate in two diametrically opposite ways, in producing both giants and dwarfs. In the second place, it is not true that the Esquimaux are the puny race they have often been represented. On the contrary, their average stature is greater than that of most of the intertropical nations. Those with whom Captain Parry associated at Igloolik and Winter island, who roam as high as the 72d degree north, measured for the men, five feet five inches and a half; and for the women, five feet and half an inch. One man stood five feet ten inches high, and several of them were elegantly proportioned.* With this admeasurement may be contrasted that of the millions who people the Indian Archipelago. According to Crawfurd, the average male stature for the brown races is five feet two inches, and the height of the women four feet eleven; while of the Papuas few are found to exceed five feet.† And were the comparison extended to the peasantry of Egypt and Arabia, and even to those of many parts of France, their average stature would still be exceeded by that of the natives of Igloolik.‡ It is obvious, therefore, that the diminutive forms of a portion of the northern tribes ought not to be attributed to cold.§

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* See Linnæus's Tour in Lapland, his *Flora Lappon.* and Clarke's Travels in Scandinavia, *passim.*

We have now to inquire how far there is truth in the analogy said to exist between the influence of heat upon fruits and the female constitution; the fruit and the female maturing, as is alleged, the more rapidly the warmer the climate, and *vice versa*. Here I must repeat that the general parallel between fruits and women does not hold good. The latter come to maturity in every climate; but this is not the case with any one kind of fruit. To preserve a correct analogy, we must take the *native* fruits and women of the same climate. In regard to the arctic regions, I do not find that the indigenous productions of Lapland, for example, are longer in ripening than those of southern climates. At the confluence of the Muonis and the Tornea, barley is sown, reaped, and harvested in seven weeks; || indeed, the rapid evolution and maturation of arctic fruits and flowers is proverbial. It may almost be compared to that primeval burst of vegetable being which followed the creative word, springing from the naked earth, and clothing it at once in the hues and luxuriance of summer. Nor can I discover that arctic quadrupeds commence the work of procreation at a later period of life than quadrupeds in our own country. If Hearne is to be credited, the polar white bear brings forth very early, "for," says

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* Parry's Second Voyage, 4to, p. 492.

† Crawfurd's Indian Archipelago, Vol. i. p. 19—24.

‡ Volney's Travels in Egypt, &c. Vol. i. p. 75—393.

§ For an explanation of the causes of the diminutive size of many of the Hindoo women, see Heber's Journal, Vol. ii. p. 509.

|| See Clarke, and Linnæus's Flora Lapponica.

he, "I have killed young females not larger than a London calf, with milk in their teats." * Equally unfounded is the notion that cold impairs the procreative appetite. It probably originated from its being observed, that animals pair in spring or in the beginning of summer, and not in the winter,—a circumstance not to be imputed to the influence of heat, as it commonly is, but solely to the instinctive choice of *that* period for propagation which insures the birth of the young taking place at the season of the year when either their food is abundant, or will be at the time of weaning. A fact recorded of the Esquimaux dogs illustrates this point. Having shelter and food for their young provided for them, these dogs breed indifferently at all seasons. "In the month of December," says Captain Lyon, "with the thermometer 40° below Zero, the females were in several instances in heat." †

The next step in our inquiry, relates to the period of pubescence in Arctic women; and first, in the Northern Canadian Indians. This race,—for there is reason to regard the various tribes as of one origin,—is composed of the great families of the Knistenaux on the east, and for the more westerly regions of numerous tribes, each known by its own barbarous but significant appellation, included in the Chepewyan family.

These traverse the vast, and generally inhospitable regions, which extend from about the 55th degree of north latitude to the borders of the polar sea in the 70th degree, and in breadth from Labrador on the east to the Pacific and Behring's Straits on the west. Though differing slightly among themselves, in a few traits of physical character, they are upon the whole remarkably alike, being of moderate stature, of a bright copper colour, with black lank hair, dark eyes, and a fine agile form. The women are somewhat less tall than those of Europe. ‡ As these Indians are hunters and fishers their food is almost exclusively animal. In affairs of love they manifest no want of ardour, though the contrary has been often asserted, as any one will be convinced who studies their manners in the writings of Charlevoix, Carver, and Hearne. § Of the period for the eruption of the *menses* in their women, little is to be learnt from books of travels; nor ought we perhaps to expect much, since, besides other impediments to such an inquiry, the Indians, like other barbarous nations, keep no reckoning of their ages. In general, therefore, when a writer pretends to fix the precise period of female puberty for any uncivilized race, it is to be regarded as at best but a probable conjecture. This remark does not of course apply in the same degree to authors who have resided long among those of whom they write. Of this class no one had better opportunities of studying the physical character of the northern Indians than Hearne; and from him we have the following specific information on the subject of female puberty. "The girls among the northern Indians, after the first menstruation, wear a small veil for some time, as they are now considered marriageable, though some at the time are *not more than thirteen;* while others, at the age of fifteen or sixteen, are reckoned children though apparently full-grown." * In Franklin's Journal, this account of Hearne is indirectly corroborated. "Among the Cree Indians," Dr Richardson remarks, "the women marry very young;"—and Mr Back relates the case of a Coppermine girl under sixteen, who had already belonged to two husbands in succession. † Again, these writers tell us, that the Indian girls at the forts, particularly the daughters of Canadians, are frequently wives at twelve, and *mothers at fourteen years of age.* More than one instance came under their notice of voyagers "taking to wife a poor child scarcely ten years old." ‡

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* Sam. Hearne's Journey to the Northern Ocean, 4to, p. 368.

† Lyon's Private Journal, p. 334.

‡ See the respective Travels of Carver, Mackenzie, and Hearne; and the more recent works in illustration of Captain Franklin's Expedition.

§ Carver's Travels, p. 246; and Charlevoix Hist. de Nouv. France, Tom. iii. p. 288.

From the Indians we proceed to the Esquimaux,—a singular people, whose country the reader may trace in imagination, if, when he has adverted to the shores of East and West Greenland, he will cross from Cape Farewell to the American continent, and skim along the vast shores of Labrador and Hudson's Bay; then northward to the inlets and islands described by Parry, and again westward, keeping the line of the polar sea, and crossing the mouths of the Coppermine and Mackenzie rivers to Behring's Straits and Norton's Sound. The whole of this tract is peopled or traversed by Esquimaux.

Their physical character is strikingly uniform. According to Captain Parry, who has given a minute description of those with whom he associated at Winter Island and Igloolik, they are rather well-formed, and by no means an ill-looking people. "There were three or four grown up persons," says he, "of each sex, who, when divested of their skin dresses, tatooing and dirt, would have been considered pleasing looking, if not handsome, people in any town in Europe." § A party of the same nation, encountered by Franklin's people near the mouth of the Mackenzie river, were equally good-looking and very robust.[*] Their gross and indiscriminate gluttony is scarcely to be credited; and their food being exclusively animal, they become extremely plethoric, and bleed at the nose on the least exertion. Indeed, this is an accident so very common that it may be said to be characteristic of the Esquimaux.[†] In the intercourse between the sexes, no people are more libidinous and dissolute.[‡]

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* Hearne's Journey, p. 314.

† Franklin's First Journey, p. 60—254.

‡ Franklin, p. 86.

§ Parry's Second Voyage, p. 493.

In the absence of almost all *direct* allusion to the period of female pubescence among this race, our only resource is indirect testimony,—a species of proof which, when it can be elicited, is doubtless highly valuable. In Captain Lyon's Private Journal, where the manners of the Esquimaux are pourtrayed with singular spirit and humour, mention is made incidentally of a pretty well-grown Esquimaux girl about fourteen years of age, already a wife.[§] Of another girl it is said, " this matron, who we found was actually married to, and lived with, Kongolik, a fine young man of eighteen, was thirteen years of age only." Captain Parry has mentioned a similar case, that of a couple where the husband was from seventeen to eighteen, and the wife not more than sixteen. " These youthful marriages," continues the writer, " are quite common among the Esquimaux of Igloolik."[||] In addition to this evidence, that of Baron Humboldt ought not to be withheld. After commenting on the very early puberty of the copper-coloured race of females, he says, that the same is equally true of the Koriacs, the Esquimaux, and the tribes of Northern Asia, " where girls of ten years are often found mothers."[¶]

I now direct the reader's attention to the northern tribes of Europe and Asia. The Laplanders are the inhabitants of a vast triangular-shaped region, whose base, in about the 65th degree of north latitude, rests on Norway, Sweden, and Russia; while its apex, ten degrees higher, in the arctic ocean, receives the name of North Cape. The Laplanders, a Christian people, are divided into the stationary, who fish on the shores and rivers, and the nomadic, whose wealth is chiefly in rein-deer. They are characterized as being swarthy, short, of fair bodily strength, and exceedingly pliant and agile. Their food is chiefly fish, and the flesh and milk of rein-deer variously prepared.[**] According to Clarke, the women are extremely ugly, many not exceeding three feet and a half in height, with features like those of the Chinese and Kalmucks, and skins of a uniformly bright yellow colour.[*] There is reason for thinking them a branch of the Esquimaux family.[†] Their sexual propensities, if we may credit writers who have visited them, do not partake of the frigidity of their climate.[‡] I regret that I can collect little to determine with precision the age when their women begin menstruating. According to Dr Denman, as we have already seen, the catamenia in them do not flow till late, and then in small quantities, at long intervals, and sometimes only in the summer. This he asserts on the authority of Linnæus. On turning to the passage in the Flora Lapponica, to which Denman refers, I find nothing whatever said of *the age at which the menses appear*; but as the passage is curious, it is inserted below.[§] Their age of marrying is given circumstantially by Clarke. The Swedes, it seems, prohibit early marriages among themselves, but do not in this particular interfere with the Laplanders. They marry, he assures us, very early, the men seldom later than eighteen, nor the women than fifteen.[||] In the same work he remarks, that it is rare to see an unmarried Laplander at twenty.[¶] It cannot be reckoned otherwise than strange, that, if the women, as Denman and others assert, are really the latest of the species in acquiring the aptitude for marriage, they should of all Europeans be the earliest to enter that state. Their presumed late pubescence is in all probability a mere fable.

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[*] Franklin's Second Journey, p. 117.

[†] Edwards in Parry's Second Voyage, p. 544. West's Residence at the Red River Colony, p. 174. Chappell's Voyage to Hudson's Bay, p. 74. Also Crantz's History of Greeenland, Vol. i. p. 214.

[‡] See Parry, Crantz, and Edege.

[§] Lyon's Journal, p. 230.

[||] Parry's Second Voyage, p. 378.

[¶] Personal Narrative, Vol. iii. p. 335.

[**] Linnæus's Tour in Lapland, Vol. i. p. 168. Canute Leems in Acerbi's Travels in Sweden, p. 187.

The Sclavonians, or native Russians, are next to be considered. They people a great country, a considerable portion of which is beyond the 60th degree of north latitude. The women are generally brunettes, plump, robust and vigorous. Many have brown or light hair, and not a few are to be reckoned beautiful. Tooke, in his account of the Russian Empire, has furnished a luminous history of their physical peculiarities, and fortunately his intimate knowledge of the Russians, owing to his long residence among them, renders him a valuable authority. "The girls," he tells us, " arrive early at maturity, numbers in their twelfth or thirteenth year: but many of them lose their beauty after being married a couple of years. The frequent use of the bath promotes an early developement and an early decay."*

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[*] Clarke's Scandinavia, Vol. i. p. 406. And Brooke's Winter in Lapland, p. 43.

[†] Clarke, Vol. i. p. 313.

[‡] Scheffer's Lapland, folio, p. 120, and Linnæus's Tour in Lap.

[§] MUSCUS ALBUS. Hoc etiam musco catamenia excipere abstergereque feminas Lapponicas mihi relatum fuit. Naturam æque hic ac alibi sibi similem esse feminasque in Lapponia ac alibi legibus menstrualibus obedire, dubium nullum est, licet hæ cruoris minorem fundant copiam innocentissimæ. Fuere et feminæ plures hic, quas vidi per totam suæ vitæ perodium ab hac lege exceptæ, licet hæ maritatæ steriles persistant. Novi et juvenculas, quæ non hyeme, sed sola modo æstate has observabant crises; imo et alias quæ semel in anno purgabantur, et hæ, quotquot vidi pedes œdematosos habebant.

[||] Clarke, Vol. i. p. 401.

[¶] Ib. Vol. i. p. 322.

The Samoides are a tawny, squat, miserable race of pagan savages, subjects of the Russian empire. They are found along the Frozen sea, on the European side of the Jugorian mountains, east of these on the river Oby, and elsewhere on the vast shores of Siberia. According to Tooke, they are mature at a very early age. " Most of the girls are mothers in the eleventh or twelfth year, but their marriages are rarely prolific; and before thirty they have already done bearing."†

Eastward from the Oby, many a league, we come to the great northern promontory of Asia, inhabited by the Tschuktschi. Their country extends from the Katirka, a river flowing from the west into the sea of Anadir, to Behring's Straits. South of this people, on the banks of the Katirka, are the Koriacks, a rude nomadic race. ‡ The Tschuktschi and Koriacks speak the same language, and, according to Lesseps and Cochrane, are the same people. In physical character and customs they are allied to the Esquimaux. § It is of these tribes that Humboldt says (as already quoted) their females are often mothers at the age of ten years.

South of the Koriacks are the Kamtschadales, inhabitants of the peninsula from which they take their name, a swarthy, uncivilized race, of short stature; allowed to be a distinct people from the more northern tribes. In no author have I found any thing said to indicate the age at which their women arrive at maturity, excepting a remark of the French traveller Lesseps. He tells us, after descanting on the amorous behaviour both of the native and Russian ladies, that " the precocity of the girls is astonishing, and seems not to be at all affected by the coldness of the climate." ||

Having thus briefly stated all the credible evidence I have been able to collect concerning the age of female puberty in the arctic regions, and shown that puberty is attained there as early at least (considerably earlier it might seem) as in the temperate zone, I will now pursue a similar course in reference to the same physiological trait in the women of warm climates. As the writers who treat of southern countries are numberless, and this inquiry is too extensive to be pursued in all its details in a

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* Russian Empire, Vol. i. p. 333.

† Tooke's Russian Empire, Vol. ii. p. 286.

‡ Simeon Navikoff's Voyage, in Coxe's Russian Discoveries, p. 43.

§ Pritchard's Physical History of Mankind, Vol. ii. p. 309.

|| M. de Lesseps, Travels in Kamtschatka, Vol. i. p. 102.

short essay, I must of necessity confine my remarks to a few well known races. I begin with those of Tropical Asia.

The islands of the Indian Archipelago support many millions of inhabitants in every grade of civilization, from the polished Malay to the cannibal of Borneo and the wretched Papua. These islands, whose soil and climate are generally fertile and delightful, extend with their connecting sea through 30 degrees of latitude from the parallel of 11° south to 19° north. The natives are divided into the brown, of moderate stature, but muscular and robust, and the black, who are said to be dwarfish and feeble. Their diet compared with that of Europeans is extremely frugal. " Under all circumstances," says Crawfurd, " a pound and a quarter of rice, a few spiceries, and a meagre portion of animal food, most frequently fish, is an ample daily allowance for an adult."* The same author has expressed himself in explicit terms respecting the age of puberty in these Islands. Owing to his profession, his literary talents, and long residence among the natives, his authority is peculiarly valuable. " Their minds," he remarks, " from the moral agency under which they are formed, certainly acquire a kind of premature ripeness earlier than in Europe, but *their bodies do not.* Puberty comes on at the same age as in Europe; the body continues to grow as long; women bear children to as late a period of life; and longevity, as a proof of all the rest, I believe to be just as frequent as here."† Other authors, it must be confessed, represent the matter differently; but it is quite obvious that they have regarded early marriages, which obtain universally in Pagan and Mahomedan countries, and even among Christian nations in a low state of civilization, as identical with early puberty; an assumption which, however natural, we show to be erroneous. Of the Javanese, Sir Stamford Raffles has asserted, that " both sexes arrive at puberty very early, and the customs of the country, as well as the nature of the climate, impel them to marry young; the males at sixteen and the females at thirteen or fourteen years of age; though frequently the females form connections at nine or ten, and, as Montesquieu expresses it, infancy and marriage go together." This passage,‡ though evidently written under the influence of the profound author of the Esprit de Lois, is extremely valuable, when taken in conjunction with the following admissions of an opposite character, both as corroborating the opinion of Crawfurd, and as showing the risk a writer must always incur of falling into palpable errors and inconsistencies when he ventures to mix up preconceived notions with observed facts. "Though women," says Sir Stamford, "soon arrive at maturity, and enter early into the married state, they continue to *bear children to an advanced age*, and it is no uncommon thing to see a grandmother still make an addition to her family." * Again, "the term of life is not much shorter than in the hot climates of Europe. A very considerable number of persons of both sexes attain the advanced age of seventy and eighty, and some even live a hundred and upwards." † It is hardly necessary for me to observe, that, since women bear children so late as sometimes till they are grandmothers, and the inhabitants in general attain the European longevity, their presumed very early maturity is improbable, and not to be admitted without clear and ample proofs, and these, if they exist, have never yet been adduced. ‡

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* Crawford's Indian Archipelago, Vol. i. p. 40.
† Ibid. Vol. i. p. 30.
‡ Raffles's Java, Vol. i. p. 70.

The tribes of Polynesia, or to employ a more modern appellation, Eastern Oceanica, are of the same race as the brown natives of the Indian Archipelago. Inhabiting islands at once salubrious, fertile, and picturesque, of which it may be said without poetic exaggeration that in them "all, save the *spirit* of man, is divine," the Polynesians present specimens of graceful and vigorous beauty, unequalled, perhaps, in any other portion of the human family. Although so much has been written concerning their manners and appearance, little or nothing has been made known of their physiology.

By the great kindness of Mr Ellis, the eminent and devoted South Sea missionary, I am enabled in some respects to supply this deficiency. For the sake of brevity, I proceed to give certain of a series of questions which I took the liberty of proposing to Mr Ellis on this and other subjects of a similar nature, together with the literal answers to them furnished at his request by Mr Bourne, likewise a missionary, who resided nearly eleven years in the islands. In addition to the answers of Mr Bourne I am favoured with many valuable remarks by Mr Ellis himself. §

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* Raffles's Java, Vol. i. p. 71.

† Ibid. p. 69.

‡ Crawford's explicit declaration concerning the period of puberty in the Indian Archipelago, we have seen. He is little less decided in what he says of the same circumstance among the Burmans. "As to the continuance of child-bearing," he remarks "it is just the same as in other parts of the world, beginning with the age of puberty, and *ending between forty and fifty.*" Journal of an Embassy to Ava, p. 467. To the period of this physical change in the girls of China the following law of the celestial empire may be considered to have pretty clear reference. "Criminal intercourse under twelve years of age shall be punished as a rape in all cases." Ta Tsing Leu Lee. By Sir Geo. Staunton, p. 404. This law must certainly be taken to imply that no Chinese girl can *naturally desire* such intercourse under twelve. Our own law is nearly the same, making it felony to have intercourse with a child under ten,—a misdemeanour if she is above that age, and under twelve.

§ It is to be remembered that the missionary residing among simple barbarians has to officiate as the mediciner of the body as well as of the mind. I am assured by Mr Ellis that after a knowledge of the Christian faith, the most important accomplish-

Query 1st. What is the age of puberty in South Sea females in general, as evinced by the usual signs, and particularly by the eruption of the catamenia? *Ans.* The age of puberty amongst Tahitians is about ten or eleven. The women have such early connection with the other sex that the catamenia *never*, that I have heard of, appeared before such connection.

Query 2d. Does the age of puberty vary in different islands or groups of islands? *Ans.* The age of puberty is alike in all the islands.

Query 3d. Does puberty appear earlier in the families of chiefs than in those of the common people? *Ans.* The chiefs and common people are alike in this respect. By Mr Ellis. "The age of puberty appears to be the same as shown by the ordinary signs, especially the catamenia, in all the islands of the same latitude, or where the climate is equal: excepting that I think in those islands where the productions are more abundant, and the mode of living consequently more luxurious, the signs appear earlier than in the same climate where the inhabitants live in a state of greater poverty. I think the Society Islanders arrive at puberty rather earlier than the Sandwich Islanders and New Zealanders. I am not aware that it does appear earlier in the families of chiefs than in others."

Query 4th. What is the earliest age at which you have known a woman become a mother? *Ans. As far as I could form an opinion of the age of females,* I should think about sixteen years of age. By Mr Ellis. "I think I have known mothers who have not been more than fourteen or fifteen years of age."

Query 5th. What is the average age of marriage for females? *Ans.* Some marry as young as ten; but the average age is about fourteen or fifteen. By Mr Ellis. "Marriage takes place from the age of twelve to sixteen years; but formerly sexual intercourse began much earlier, and was often practised when the parties could not be more than six or seven. I am quite confident that I am stating fact on this point. In marriages there is often the greatest disparity in age, the male being thirty or upwards, and the female perhaps twelve or thirteen."

Query 6th. Have you observed that early marriages (giving the ages at which they occur) are generally *soon* productive? *Ans.* In very early marriages, several years elapse before child-bearing. By Mr Ellis. "Some years usually elapse in early marriages before child-bearing."

Query 7th. To how late a period in life have you known

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ment of the missionary is a practical acquaintance with medicine and surgery. Aid even of an obstetrical kind is occasionally demanded of him, and with too much urgency to be refused. This double capacity which he sustains, of religious teacher and physician, renders the testimony of the enlightened missionary of great weight on many subjects connected with the natural history of man.

child-bearing continued? *Ans.* To about forty-five years, as near as I could judge.

Query 8th. Have you observed this period to vary according to such circumstances as climate and degree of civilization? *Ans.* A hot climate causes women to have children faster than a cold one; but child-bearing ceases also earlier than in a cold one.—By Mr Ellis. "I should think child-bearing ceased at forty. Although I have seen many young mothers, I never saw any woman have a child who *I should suppose* was above thirty-five."

These answers and observations require few comments. Were it even indisputably proved, that tropical women seldom bear children after the age of thirty-five or forty, such a fact would not prove that their pubescence is earlier than that of Europeans. It would perfectly coincide with, and tend to illustrate, an admitted physiological principle, with reference to our own countrywomen, that child-bearing commenced at a premature age, for example, under sixteen or eighteen, rarely continues throughout the whole of the natural period of female fertility.* Taken altogether, these answers certainly corroborate the doctrine of Crawfurd, already stated in regard to the tribes of the Indian sea, of which the Polynesians may be considered a mere extension. Although the age of puberty in Polynesian women is said by these intelligent missionaries to be about ten or eleven, yet fourteen or fifteen is the earliest age of child-bearin, and forty according to Mr Ellis, and forty-five in the opinion of Mr Bourne, is the period for the cessation of that function. When along with these statements, I consider the hesitation which both gentlemen evince in their manner of giving the age, at which, as they believe, each of the circumstances takes place,—a hesitation arising from the difficulty of becoming acquainted with the ages of individuals in such a condition of Society,—I confess the impression on my mind is, that, although sexual intercourse and marriage are so much earlier in Polynesia than in Europe, the period of puberty is really not earlier.

We now pass on to consider the African Negress. The orang-outang breeds at three years old, *therefore*, as Mr Long, the historian of Jamaica, would have said, the negress will be mature about the same age or a little later.† Fortunately we possess extremely valuable information concerning the age of puberty in the negro,—information which rebuts *this*, one of the numberless calumnies which the abettors of negro slavery have heaped upon this devoted race; I allude to that which is contained in Dr Winterbottom's Natural History of Sierra Leone. It would have been well for both science and humanity, had our intelligent medical practitioners on foreign stations oftener taken this admirable performance as their model for works of local history. After commenting on the small number of children generally to be found in the families of the negroes, Dr Winterbottom remarks, "although women are betrothed at a very early age, even before they are born, the marriage seldom if ever takes place before the fourteenth year; and, judging from appearances, no women in this part of Africa bear children before this age. There is no doubt women in hot climates arrive at maturity somewhat sooner than in more temperate and colder ones; and that child-bearing sooner terminates. But we may doubt if this be so early or so generally the case in these countries as authors assert, it being extremely difficult to ascertain ages where a few revolutions of the moon comprehend the greatest space of time they retain in their memories."* Again, "the catamenia appear at an early age, but, to judge from appearances, probably not before the twelfth year."† Further, in commenting on what White has asserted of negresses, namely, their being ripe for marriage at eight years of age, he says "the period of puberty is fixed in both sexes much too early. As far as my experience goes, there is little difference in this respect between the African and the European."‡ Elsewhere he states, that the negress bears children to a late period of life, and that negro longevity is no way different from ours. It is pretty clear that Dr Winterbottom, who wrote in the latter end of the last century, was not free from the influence of the prevailing opinion, that fervour of climate promotes early puberty. It is therefore much to the credit of his candour, that he should have yielded himself to the guidance of facts, though militating against his prepossessions.

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* "When a woman begins to breed at an early period, as at fifteen, and has her children fast, she seldom breeds longer than thirty or thirty-five; hence we may suppose either that the parts are then worn out, or that the breeding constitution is over. If a woman begins older, as at twenty or twenty-five, she may continue to breed to the age of forty or more; and there are now and then instances of women who, not having conceived before, have had children as late in life as fifty and upwards."—John Hunter, Phil. Trans. Vol. lxxvii. p. 233.

† In advocating the cause of the orang-outang against the pretensions of the negro, this historian goes on to say, "nor, for what hitherto appears, do they (the large apes) seem at all inferior, in the intellectual faculties, to many of the negro race; with some of whom it is credible that they have the most intimate connexion and

The Arabian peninsula extends from the Torrid Zone to about

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consanguinity. The amorous intercourse between them may be frequent, &c. &c. Vol. ii. 4to, p. 370. Again, "Ludicrous as the opinion may seem, I do not think that an orang-outang husband would be any dishonour to an Hottentot female; for what are these Hottentots! they are ignorant, brutal," &c. Vol. ii. p. 364. According to this singular hypothesis, the Mulatto son of a West Indian planter may be the grandson of a monkey.

* Natural History of Sierra Leone, Vol. i. p. 150.

† Ib. Vol. ii. p. 205.

‡ Ib. Vol. ii. p. 263.

the 30th degree north. The legend, that Mahommed took to wife a girl of nine years old, is often repeated, as tending to prove the early maturity of Arab women. Be this legend true or false, there cannot be a doubt that the prophet was excellently acquainted both with the physical and mental peculiarities of women. For this reason the Koran, and perhaps also the writings of its faithful commentators, may, as far as they illustrate the present inquiry, be referred to as veritable authority. The information they furnish is little in amount, but it is perfectly satisfactory. In chapter the fourth, "On Woman," there is this command in reference to the duty of a guardian: "Examine the orphans (in religious matters) until they attain the age of marriage." In a note by Sale it is added, that the age of marriage, or maturity, is "reckoned to be fifteen,—a decision supported by a tradition of the prophet, although Abu Hanifah thinks eighteen the proper age."* In chapter the second, entitled "Cow," which, among other matters, treats of divorce, it is said, "a woman, before she is dismissed, must wait to have her courses thrice, in order to discover if she be with child." Sale adds, that in the case of those who are too young, and those who are too old, to have children, (which a woman is reckoned to be after her courses cease, and she is fifty-five lunar years, or about fifty-three solar years old,) they wait only three months.† From this law two facts are elicited, first, that in Arabia, women may be married before puberty; and, second, that women are not considered to be past child-bearing till fully as late an age as is determined for the women of Europe. This latter circumstance is of much weight in deciding the question at issue; for, *if it be true* that Arab women bring forth children as late in life as women with us, it is vain to assert that they are ready for child-bearing earlier. The value of the other fact will be afterwards adverted to. In addition to so much presumptive testimony, I am able to add that of the celebrated traveller Madden. In answer to one of several queries which I took the liberty of addressing to him on some points concerning the Bedouins, he says, "the age of puberty in Arab women is fourteen years. The average age of marriage is from *eleven* to fifteen." What Dr Russell reports of the females of Aleppo may be mentioned here, as the climate of Aleppo differs little from that of Arabia. He does not state the period of puberty; but his observations are otherwise relevant, as tending to show that the women are not sufficiently mature for the office of mother, at the preposterously early ages at which they become wives. "The women," he writes, "when married extremely young, that is, about twelve or thirteen, are subject to frequent abortions; in consequence of which, their constitutions are so much impaired that they either cease breeding altogether about the age of twenty-one, or they remain barren for an interval of several years. Even those who marry at the more usual age, between fourteen and seventeen, though less subject to abortion, are yet, in like manner, when they happen to have brought two or three children before their twenty-third year, liable to cease child-bearing for a long succeeding interval."*

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* Sale's Koran, Vol. i. p. 93.

† Koran, Vol. i. p. 41.

It now remains to exhibit very briefly the various circumstances which have led travellers to form erroneous conclusions concerning the PERIOD OF PUBERTY in warm climates. They are,

FIRST,—*Early marriages so general in the east, and in other fertile tropical countries, where the simple means of life are easily obtained; and wives, procured by purchase, are viewed as the goods and chattels, rather than as the companions and equals of the men.* It is doubtless strange that a man should marry a child, but it is nevertheless true; and, moreover, is not the only strange and unnatural practice into which men fall in states of society where the mind, debased by superstition and tyranny, finds its chief gratification in the indulgence of the sensual passions. Nowhere are there earlier marriages than among the Hindus; of this we have many curious illustrations in Buchanan's minute and intelligent account of a "Journey through Mysore, Canara, and Malabar." Among the Comatigas, a high caste of Hindus, the women are no longer marriageable after the signs of puberty have appeared.† Of the Bheri he reports the same custom, and says, "where polygamy prevails love is little known; or if it does possess a man, he is generally captivated by some artful dancing girl, and not by any of his wives, all of whom were married before they could either excite or feel that passion."‡ Among the Waddara, the girls continue marriageable from seven years of age till their death.§ Again the Pacanat Jogies, and some of the other sects, "do not marry their girls till after the age of puberty;"|| while among the Ladas, a high caste, "a girl after ten years of age is no longer marriageable."¶ In Sumatra, as well as in the east generally, female children, owing to the custom of purchasing wives, are a valuable part of the property of parents. Hence, all marry, and very young.** Speaking of the entire Indian

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* Russel's Natural History of Aleppo, Vol. i. p. 196.

† Buchanan, Vol. i. p. 257.

‡ Ibid. p. 260.

§ Ibid. p. 311.

|| Ibid. p. 336.

¶ Ibid. p. 424.

** Marsden's History of Sumatra, p. 218.

Archipelago, Crawfurd assures us that it is a point of honour with parents to get their daughters married at the age of puberty, and that he never saw a woman at the age of twenty-two who was not or had not been married.[*] It would be easy to multiply illustrations to the same effect.[†]

SECONDLY,—*Universal licentiousness, leading to sexual intercourse in childhood, or as soon as desire is felt.* This occasions instances of pregnancy, sometimes, at a very early age, which coming under the notice of travellers are readily, and with some show of reason, attributed to general early pubescence. "In Bengal," says Mr Dunlop, "I have seen many girls come to the age of puberty at eleven, and sometimes a mother at the age of twelve."[‡] The former circumstance is far from being uncommon in our own country; and the latter would oftener be witnessed, as I before remarked, did the same sexual licence prevail as among the Hindus. In reflecting on this trait of eastern society, it is impossible not to feel that the devoted student of human nature, had need not to possess a fastidious taste. His subject, it is true, is the most enticing and most profitable in which he can engage,—yet in its pursuit he must be content with a fate somewhat resembling that of the humbler chemist. As the latter has to deal, at one time, with precious gems, and sweet perfumes, and at another with putridity and fetor,—so he who would become acquainted with man as he *is*, must submit to investigate the very lees of his nature (how large a proportion of the whole!) as well as the purer and nobler ingredients. In Asiatic manners there is much that is odious and feculent, and of this, unquestionably the most disgusting part is, the precocious acquaintance with the sexual passion which almost universally obtains. In allusion to the way in which the Hindus train their children, the Abbé Dubois informs us, that from their earliest age they are accustomed to scenes of impropriety; that it is not uncommon to see children of five or six years, become familiar with discourse and action which would make modesty turn aside. The nudity in which they live for the first seven or eight years; the loose conversation, tales, and songs to which they have to listen; the stories of the dissolute lives of their gods; the solemn festivals, so often celebrated, where modesty is wholly excluded; the abominable allusions which many of their daily practices always recal; their public and private monuments, on which nothing is ever represented but the most revolting obscenities, and their worship, in which prostitutes act the principal part; these are some, and but some, of the polluted sources from which the youthful imagination of the Hindu draws its imagery![*]

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[*] Crawfurd's Ind. Arch. Vol. i. p. 86.

[†] It is not easy to define, with precision, the circumstances which regulate the age of marriage in different states of society. Even in the east there is considerable diversity in this particular, as the reader will find by consulting the following authorities. Crawfurd's Siam, p. 521. Elphinstone's Cabul, p. 179. Golownin's Recollections of Japan, p. 100. Volney's Travels in Syria, &c. Vol. ii. p. 486. Wittman's Greece, p. 25. Goodisson's Ionian Islands, p. 222.

[‡] Dunlop's edition of Beck's Med. Jurisp. p. 83.

THIRDLY,—*The early decline of beauty and of youthful appearance, where the women begin, while very young, to bear and suckle children.* This we see even in our own climate, in almost all cases of early prolific marriage, and still more remarkably when there happens to be, superadded, a life of toil, anxiety, and poverty. Frequent as such an adverse condition of the female sex is in Europe, it is in a far more aggravated degree their almost invariable lot in Mahomedan and Pagan countries, and unquestionably contributes greatly to induce premature decay. To these causes, which affect more particularly the symmetry of the figure, are joined certain rites, practised with the view of improving the complexion, which, however, very soon produce the contrary effect. The simple manners of savage and semi-barbarous life have been the theme of much eulogy; but it is nearer the truth to affirm, that the love of personal adornment is greater in proportion as we descend the scale of civilization. At the bottom, are tatooing, the employment of cow-dung and paint; and an endless variety of modes of disfiguring the features. But in almost every degree of the scale, the use of paint is retained; by some to improve or to create beauty; and by others for the purpose of lengthening the period of its duration. With whatever view pigments are applied to the face, their effects, from their being generally composed of metallic oxides, are the loss of the natural hue, and the rapid production of wrinkles, the skin, even in the meridian of youth, soon presenting the dull roughened appearance that it assumes in unhealthy old age. Such are some of the circumstances which led the intelligent Marsden to remark of the Sumatran women, and that have led nearly all other writers in similar circumstances, to affirm of the women of other tropical races, that "they are like the fruits of the country,—soon ripe and soon decayed."[†]

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[*] For a singular and *illustrative* trait of barbarian manners the reader may see J. R. Forster's Observations made in a voyage round the world, p. 472.

[†] The strange propensity to paint their faces is remarked by travellers, of the women of every race that have skins not absolutely black. Kempfer informs us that the ladies of Japan paint themselves till they look like so many babies. Hist. of Japan, Vol. ii. p. 455; and the tawny females of the Indian Archipelago file and blacken their teeth, paint their faces, and pluck the hair from about their eyes, till their natural beauty, in the opinion of a European, entirely vanishes. To confine our observations to Europe and Barbary; the Crim Tartar ladies paint their faces

FOURTHLY,—*The difficulty of ascertaining the ages of individuals in countries little advanced in civilization.* We have already heard from Dr Winterbottom of the impossibility of becoming acquainted with the ages of the negroes from any reckoning of theirs. Marsden affirms the same of the Sumatrans. "Not one in ten," says he, "can pronounce in what year he was born. After a few harvests have elapsed, they are bewildered in regard to the date of an event, and only guess at it from some contemporary circumstance of notoriety." * The same is reported by Crawfurd of the natives of the Indian Archipelago. † Among the American Indian tribes, the difficulty is still greater. James assures us that superstitious notions prevent the Indians from taking any note of their ages. ‡

FIFTHLY,—*The influence of Montesquieu.* The celebrity of this writer's great work,—the Spirit of Laws,—has now passed away; but no production was so much studied, admired, and quoted, during the latter half of the last century. Weighty as the opinions it maintains were esteemed to be on many topics of high concernment to mankind, none were more unhesitatingly received and adopted than those contained in the extract already given, relating to the condition of eastern women. The greater proportion of females than of males, in the east, the infantile pubescence of the former, (for it would seem that this philosopher considered sexual prematurity as confined to the women,) polygamy, arbitrary divorce, and the degradation of the sex to a state of seclusion and slavery, were all held, on his authority, to be inseparable from the constitution of Asiatic Society. With such blind ardour were these notions embraced, that we find almost all our travellers preferring to receive, as incontrovertible truths, the bold assertions of Montesquieu, rather than incur the trouble of observing and investigating for themselves The consequence has been what was to be anticipated. Their views of the manners and physical character of the races they describe are often vague and contradictory; and their reasoning altogether unsatisfactory. Raffles and Marsden, (particularly the latter,) are

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both white and red. Holderness on the C. Tartars, p. 14. The early decay of the Greek ladies has been often remarked. Clarke says they begin to look old soon after twenty, while the Albanian women long retain their good looks. The Greeks are profuse of paint, while the Albanians trust to the hues of nature. Trav. in Greece, &c. Part 2, sect. 3; and Wittman's Trav. in Turkey, &c. p. 25-443. The Moorish and Bedouin ladies are still more given to rouge, so much so, as almost to mask themselves with it. Tully's Tripoli, p. 22, and Lyon's Africa, p. 40. Of these, and of the women of all the races where paint is in general use, the prematurity of their decay has been noted by travellers. On the continent of Europe, the same practice, it is well known, entails a similar consequence.

* History of Sumatra, p. 248.

† Indian Archip. Vol. i. p. 46.

‡ Expedition to the Rocky Mountains, Vol. i. p. 214.

the undisguised disciples of Montesquieu,—a circumstance which, perhaps, on some points, detracts from the value of their excellent histories.[*]

SIXTHLY,—*Drawing conclusions from a few data only.* Even in our own country, physiologists have fallen into error concerning female puberty, from this very cause. They, as we have seen, have limited the time for the appearing of the *catamenia* to the thirteenth, fourteenth, or fifteenth year, when, in fact, it has a range of nine or ten years, instead of three. It ought not, therefore, to excite surprise, when the traveller, or the local historian of a foreign region, reports erroneously, since his opportunity for obtaining accurate information on so delicate a subject must be very inferior to those of professional inquirers at home. That the inaccuracy of the reports of travellers, however, corresponds with the slender means of information within their reach, is well illustrated by what we learn of the period of puberty among the American Indians. Setting aside the marvellous assertion, so long credited, that the Squaws have no *catamenia*, Dr Rush says they do not begin to menstruate "till they are about eighteen or twenty years of age."[†] James, in the Account of the Expedition to the Rocky Mountains, writes thus of the same race: "We were informed that the catamenia, and consequent capability of child-bearing, take place about the twelfth or thirteenth year."[‡] Among the Potowatomis,—a tribe on the southern margin of lake Michigan, Keating reports that the catamenia appear about fourteen; and, among the Dacotas,—another people north of the former,—at fifteen or sixteen.[§] The women of California and Chili, according to M. Rollin, surgeon in the expedition of La Perouse, menstruate about the age of eleven or twelve.[||] While, to add the climax to this tissue of contradictory statements, Humboldt assures us, when treating of the Chaymans of New Andalusia, who are often married at the age of twelve, that early puberty is common to all the copper-coloured tribes, and is a peculiarity of the race, without respect to climate. [*] Perhaps a reference to the table, illustrating the period of puberty in our own countrywomen, in a former page, may enable the reader easily to reconcile these and the other discrepant accounts before-mentioned, with reference to the very early maturity of Arctic females, by showing that each of the writers named was in all probability correct, as far as the observation of a few facts went, and only wrong in venturing to generalize from too limited premises.

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[*] It is surprising how uniformly, unhesitating, and yet how vaguely, under the influence of a preconceived and popular theory, early pubescence is ascribed by our voyagers and travellers to the women of almost every country out of the bounds of Europe. Of the Otaheitians, Forster observes, "the call of nature is heard at an early age in this happy climate." Voyage round the World, p. 216. Of the aborigines of New Holland, Collins says, "the union of the sexes takes place at an earlier period than is usual in colder climates." New South Wales, Vol. i. p. 563. And the New Zealand women, Captain Cook tells us, "are marriageable at a very early age." 2d Voyage, Vol. i p. 140. What are we to understand by such indefinite phrases as "early age,"—"earlier than in cold climates," and "very early age?" Yet in perhaps a hundred massive volumes of voyages and travels, we shall search in vain for as much information on the period of puberty, as these extracts contain.

[†] Pritchard on Man, Vol. i. p. 112.

[‡] James, Vol. i. p. 214.

[§] Keating's Expedition, Vol. i. p. 131-232.

[||] The Voyage of La Perouse, Vol. iii. p. 206.

In conclusion, it is perhaps scarcely necessary for me to observe, that we are still, in a great measure, ignorant of the causes which diversify the period of puberty in women in our own country. If, besides this diversity in individuals, there is really a difference of a more general kind, depending on the influence of climate, I can only remark, that such an opinion appears to me to be unsupported by satisfactory proofs,—to be, indeed, rather a vulgar hypothesis than a physiological truth. If it be true that a tropical climate developes the sexual passions long before the expiration of childhood, such a fact must for ever militate against the benevolent hopes cherished by many of the best of mankind, that a bright day of moral renovation awaits the degraded myriads of the equinoctial world.

2*d*, *Of the Periodical Recurrence of the Menses.*

The terms *menses* and *catamenia*, (Καταμήνιος monthly) which have been employed from the earliest ages to designate this secretion, show that it has been usual to regard it as of monthly recurrence. In looking into our standard English writers on midwifery and physiology, I do not find (with one exception[†]) that they have noticed the existence of any deviations from this law, except such as are of the nature of disease. Dr Gooch, whose sentiments on this subject have been recently given to the public, remarks, that menstruation recurs " with almost mechanical regularity every month, unless pregnancy, nursing, or certain diseases interrupt the natural functions."[‡] And Alison briefly expresses the same opinion thus: " The menstrual discharge takes place from the inner surface of the uterus, in the healthy state, *every four weeks.*" [§]

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[*] Personal Narrative, Vol. iii. p. 235.

[†] In the article " Generation" in Rees's Encyclopædia, said to be the production of Mr Lawrence, certain natural deviations, from what is regarded as the *menstrual* law, are alluded to. The entire article is well worthy of perusal. See also Traité d'Accouchements, &c. par M. Gardien, T. i. 229.

[‡] A Practical Comp. by Dr Gooch, p. 2.

[§] Alison's Physiology, p. 377.

It is unquestionably true that in a considerable majority of instances the *catamenia* recur monthly, *i. e.* from the cessation of the secretion at one period to its reappearance at the next, there elapses an interval of twenty-eight days. But, as I shall be able to show, there is a certain proportion of women in whom the interval is not four but three weeks; another smaller proportion in whom the interval (apparently in no degree owing to disease) is irregular; being, in the same woman, at one time three, at another time four, or six, or eight, or even twelve weeks. And in another, but much smaller, proportion in whom the *catamenia* return regularly every fortnight. In all these varieties, I may remark, the secretion continues to flow from about two to six days in general, (in some three or four days longer) varying in different women according to natural difference of constitution; and varying, even in the same person, both in duration and quantity, from causes no way affecting the health. Indeed I am convinced that the *catamenia*, in perhaps the majority of women, deviate not unfrequently from exact periods; and vary, both with reference to the quantity secreted and the continuance of the flux, without there being the slightest symptoms of disease, either assignable as the *cause*, or appearing as the consequence of such irregularity.

The statement which follows is the result of inquiries made in one hundred instances. Although the majority of the women were patients of the Lying-in Hospital, yet a very considerable number belonged to a different rank of life. The care and caution, moreover, bestowed on the investigation leave no doubt on my mind in regard to its correctness. I am aware that, in drawing a conclusion which is opposed to perhaps the general belief of the profession, a wider induction of facts would have been desirable; but the nature of the inquiry renders its pursuit neither pleasant nor generally convenient. I must, therefore, be permitted to say respecting the data, that, although *I* regard them as satisfactory, I leave it to the reader to estimate them at what he considers to be their proper value.

Of 100 women, there were 61 in whom the menstrua recurred monthly; 28 in whom they recurred after an interval of three weeks; 10 in whom they recurred after intervals of varying and uncertain duration; and 1 (a healthy woman of twenty-three years of age) in whom they recurred regularly every fortnight.

In these 100 instances, which were taken consecutively without selection, only *one* occurs in which the *catamenia* returned every fortnight. Such cases, however, are far from uncommon; and, what is remarkable, this variety of menstruation generally exists as a family peculiarity. I happen to be acquainted with two families in which this is the case; and in one of these families the peculiarity extends into collateral branches. Through the kindness of several professional friends, I have received information of other instances precisely similar.

3d, *Of the Age at which the Menses finally cease.*

The circumstances which attend the final cessation of the menstrua bear some analogy to those which attend their commencement; chiefly in respect to the different ages at which they cease to appear in different persons; and also in their frequent irregularity, both with reference to periods and to the quantity secreted,—during several of the latter years of the menstrual epoch.

I have already observed that it is an admitted physiological principle, that child-bearing, begun at an early age, at sixteen or eighteen for example, rarely goes on throughout the whole of what is usually regarded as its natural period. The earlier or later termination of child-bearing, therefore, in any country, will depend on the average age of marriage which there obtains. In our own country I am led to believe, from facts which I have collected, that the average age of marriage for women is about twenty-one years. Assuming this as correct, the following table may be regarded as possessing some interest; rather, however, as tending in some degree to illustrate the opinion of Hunter, mentioned in a former page, than as bearing on the question as to the age at which the menstrua cease. It is drawn up from the Registers of the Manchester Lying-in Hospital, and shows, on the average of 10,000 instances of pregnancy at all ages, the *proportion* which conceive when above the age of forty. These registers, voluminous though they be, are, I am sorry to say, not to be relied upon for data illustrative of the results of midwifery practice, except for a few particulars; one of which, however, is the ages of those women admitted as home-patients.

Of 10,000 pregnant women 436 or $43\frac{3}{5}$ per 1000 were upwards of forty years of age. Of these 436 women.

101 or	$10\frac{1}{10}$ per 1000, were in their	41st year.
113	$11\frac{3}{10}$	42
70	7	43
58	$5\frac{4}{5}$	44
43	$4\frac{3}{10}$	45
12	$1\frac{1}{5}$	46
13	$1\frac{3}{10}$	47
8	$\frac{4}{5}$	48
6	$\frac{3}{5}$	49
9	$\frac{9}{10}$	50
1	$\frac{1}{10}$	52
1	$\frac{1}{10}$	53
1	$\frac{1}{10}$	54

Here it will be observed by the reader that the number of pregnancies suddenly and greatly diminishes after the age of forty-five. From the age of forty-six to fifty both inclusive the numbers are nearly equal for each year: indicating, I am disposed to think, that those who conceive above forty-five, *e. g.* at forty-six or forty-seven, probably possess a peculiar constitution fitted for child-bearing even to the age of fifty. Above the latter age the proportion dwindles to one instance of pregnancy in 3333.

An examination of the table naturally suggests to the mind two questions: first, have women, bearing children above the age of forty-five, generally been married late in life? And second, do the catamenia, in such instances, always continue as long as the generative faculty? To the first question I can give only an imperfect but, perhaps, a sufficient answer: Of eleven women, three of whom had a child each in her forty-ninth year; and the other eight had each a child above that age, I ascertained that the aggregate number of their children was 114, *i. e.* 10 and a fraction for each woman; a fact indicating that they must have married rather early in life. Concerning the age of marriage in two out of the eleven I possess some information; the one married at eighteen years old, had two children before she was twenty-one, and brought forth her fourteenth child in her fiftieth year; the other was married from a boarding-school at a very early age; in her fifty-third year she was delivered of her twelfth child. In regard to the second question, as to whether the menstrua always continue as late as the power of conception, all the facts which have come under my observation favour a reply in the affirmative. I am able to speak confidently concerning three women who had children at advanced ages;—one in her fiftieth year, another in her fifty-first year, and the third in her fifty-third year. In each of these instances the menstrua continued up to the period of conception.

These facts do not of course exhibit the ages at which this secretion finally ceases. The following table, which I have been enabled to present chiefly by the kind assistance of my intelligent friend Mr Harrison, House Surgeon to the Manchester Work-House, shows this circumstance, as far at least as the number of the facts affords a general conclusion. In 77 women the catamenia finally ceased at the following ages:

In 1	at the age of 35 years.	In 26	at the age of 50 years
4	40	2	51
1	42	7	52
1	43	2	53
3	44	2	54
4	45	1	57
3	47	2	60
10	48	1	70 *
7	49		

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* This woman ceased menstruating for twelve months about the fiftieth year.

Art. II.—*Observations on some circumstances which prevent the rejection of the contents of the Stomach by vomiting.*

By Jonathan Osborne, M. D. Fellow of the King and Queen's College of Physicians in Ireland, and Physician in Ordinary to Sir Patrick Dun's Hospital.

Although the mechanism of vomiting has been fully and successfully investigated by Magendie and other physiologists, and it has been established by their experiments that the action of the muscular fibres of the stomach is not the chief means, but that it is subservient to the pressure exercised by the diaphragm and abdominal muscles, yet there are several points connected with the function of vomiting which have never been sufficiently examined. One of these is the impossibility of vomiting which exists in some individuals, and also in some animals. Two modes in which this impossibility is produced, are the subject of the following observations. 1*st*, *Contraction of the œsophageal orifice ;* 2*d*, *Permanent opening of the pyloric orifice.*

1*st*, *Contraction of the œsophageal orifice.* This may take place in consequence of inflammation causing thickening of the mucous membrane, and also spasm of the circular muscular fibres at the orifice, as is observed in some cases of poisoning by arsenic, and other corrosive metallic poisons ; in which there are violent retchings and convulsive efforts at swallowing, but the contents of the stomach are not rejected, and nothing comes up but glairy mucus, derived from the pharynx and œsophagus. In other instances this kind of impossibility of vomiting arises solely from spasmodic action at the orifice, and is independent of any inflammatory action. I am indebted to my friend Dr Perceval Hunt for the following statement of a case which appears to belong to this head.

"A Mr S. has never vomited, so far as he remembers, under any circumstances, and appears from his earliest infancy to have been unable to discharge the contents of his stomach. Sea voyages have always caused great nausea, faintness, pain, and sense of twisting in the region of the stomach, succeeded by hiccup and most severe sneezing, then an intermission followed by another severe paroxysm, but never by retching or vomiting. Drinking wine to excess has always brought on a similar train of symptoms. He does not recollect ever to have taken an emetic, or any thing intended to induce vomiting but once, when during childhood, he was largely drenched with warm water, which, however, produced

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Again she became regular and continued so till the age of seventy. She is at present in her seventy-sixth year.

no other effect than great distension of the stomach. This peculiarity extends to several members of his family. One of them having by the advice of a physician unacquainted with the circumstance, taken tartar emetic, suffered severely, and lay in a state of insensibility for two days. I may remark, that all those persons are of the habit usually denominated nervous, and subject to dyspepsia in a great degree from the slightest errors in diet."

In the above case, the sense of twisting in the region of the stomach, with the nausea and faintness, while the system was under the influence of an emetic, denotes a strong effort to reject the contents of the stomach by vomiting, and the sneezing shews that the diaphragm took an active part in these efforts, which appears to have been too violent, and to have actually prevented the vomiting from taking place.

It must be recollected that the *crura* of the diaphragm, between which the œsophagus passes, can, by their contraction, firmly close the tube, so as to prevent a passage; and that in ordinary vomiting the diaphragm is not in a state of active muscular contraction, but having contracted so as to fill the lungs with air, it remains passive, while it is supported by the air retained in the lungs by means of the active contraction of the muscles of the *glottis*.

The second instance which I am able to adduce is that of a medical gentleman of eminence in this city, who, when in a state of alarm from having been exposed to the contagion of fever, which he thought he had contracted, took eighteen grains of tartar emetic in repeated doses in the space of a few hours, without being able to produce vomiting, although on a former occasion he vomited after taking four grains. He has always attributed this circumstance to the eagerness with which he wished vomiting to take place on this particular occasion; and it is well known in hospitals that patients, when desired to pass their urine in the presence of the medical attendant, experience a kind of constriction at the neck of the bladder, which increases with their eagerness to overcome it, and prevents them for some time from complying, although at other times the passage takes place without any difficulty whatever.

I have no doubt that I might have adduced a number of similar instances in which vomiting was prevented by spasmodic closure of the œsophageal orifice; but I prefer to appeal to the recollection of practitioners, who must have met with instances, not only of this kind of impossibility of vomiting, but also of impossibility of eructation of the gaseous contents of the stomach, from the same cause, although at the time the mode in which such occurrences took place did not attract their attention.

2dly, Permanent opening of the pyloric orifice. It is obvious that, if the *pylorus* remains open, the contents of the stomach will, when exposed to pressure, pass down through it, and not into the *œsophagus*, and that thus vomiting will not take place. The following case I adduce as an instance of a disease in which vomiting always occurs, yet in which it could not occur in consequence of permanent enlargement and patency of the pyloric orifice, induced by scirrhus and ulceration.

Catherine Finegan, aged 45, married, was admitted to Sir Patrick Dun's hospital on the 18th of August, in a state of extreme emaciation, with the dusky jaundiced hue of the countenance which usually comes on towards the fatal termination of cancerous diseases. She complained of severe pain at the pit of the stomach, and right *hypochondrium*, shooting to the back and left shoulder. The left lobe of the liver was distinctly felt to be of a great size, indurated, painful on pressure, and with large eminences on its anterior surface. Pulse 100; can lie only on her right side; constant diarrhœa, with discharges of whitish shreds, having a peculiar cadaverous odour. A period of fourteen months had elapsed since the commencement of the disease. After her admission, the diarrhœa and pain were alleviated, but the former recurred; and on the 27th, slight rigors, with collapse of the countenance, came on, and she died on the evening of that day, *having never vomited, nor been affected with singultus during her residence in the hospital.*

On examination after death, the reason why vomiting was absent in this case, when in every instance of the same disease of the stomach it is always present, became quite manifest. For the *pylorus* was found presenting a firmly attached and permanently open orifice, of an inch and half in diameter, formed by jagged ulcerations of a mass of scirrhous structure, surrounding the part which connected it firmly with the left lobe of the liver, into the substance of which the ulceration had penetrated to a considerable extent. The tunics of the stomach were gradually increased in thickness from the cardiac towards the pyloric extremity, and the liver presented large circular masses of scirrhous structure, which at the concave surface of the left lobe were involved in the mass surrounding the *pylorus*. A preparation of those parts has been deposited in the Museum of the College of Physicians.

In this instance it is obvious, that, whether the action of vomiting were attempted to be performed by the diaphragm and abdominal muscles, or by the contractions of the stomach alone, in either case its contents must have been forced down the *pylorus*, and not into the *œsophagus*.

If we endeavour to illustrate this subject by an appeal to personal experience, many instances will occur to our recollection of a state of suffering from nausea instantaneously relieved by a convulsive motion felt in the region of the stomach as if it had rid itself of its contents, without, however, any vomiting having taken place. This is best explained by admitting an open state of the *pylorus* to have prevented the occurrence of vomiting. This open state may be temporary, and produced by temporary causes, and may depend especially on the small extent to which the stomach is at the time distended. The facility of vomiting occasioned by taking large draughts of fluid appears to be less owing to the excitement of its bulk, than to the diminution of the orifice of the *pylorus* which takes place when the great curvature is turned outwards as it is in the distended state. It is well known that vomiting rarely if ever occurs in the horse, and an examination of the stomach in that animal proves vomiting to be almost impossible; for the diameter of the *pylorus* is so large as to admit the passage of a hand of ordinary size, and is at least twice the diameter of the *œsophagus:* so that every circumstance must cause the contents of the stomach to be propelled through the former in preference to the latter orifice. This fact is the more worthy of remark as Cuvier (Leçons d'Anatomie Comparée) has ascribed the impossibility of vomiting in the horse to the strength of some of the longitudinal muscular fibres at the œsophageal extremity. This opinion was formed before the experiments of Magendie and others had evinced the small share which the muscular fibres of the stomach take in the act of vomiting. The longitudinal fibres in the horse are quite inadequate for the purpose assigned, and are very little if at all more developed than they are in animals in which vomiting is most familiar.

The influence exercised by the *pylorus* on vomiting has been much overlooked. In diseases affecting that portion of the stomach next the pyloric orifice, vomiting is most likely to occur whilst the appetite is most affected by affections of the cardiac extremity. This conclusion I have arrived at after comparing a great number of my cases and dissections. Notwithstanding, there may be several exceptions, as, for instance, when the affection is situate in the small curvature, in which case neither deficiency of appetite nor vomiting may occur. The vomiting being so uniform an attendant on disease in the neighbourhood of the *pylorus* appears to arise from spasmodic contraction of that orifice taking place, in consequence of its being near an excited part.—And it must be held in recollection, that something must take place to cause the *pylorus* to contract, else there will be no vomiting. Magendie's well known experiment of substituting a bladder for the stomach may cause this necessary action of the *pylorus* to be overlooked. In that experiment vomiting was inevitable when the abdominal muscles contracted in conjunction with the diaphragm, because the contents of the bladder had only one exit, *i. e.* through the *œsophagus*. The existence of another orifice in the stomach renders the action more complex, and introduces a new condition to be fulfilled, which, if rendered impossible, vomiting also becomes impossible,—which constitutes the second kind of impossibility mentioned at the commencement of these observations.

ART. III.—*Case of Melanosis of the Stomach, &c.* By F. OGSTON, M. D. &c. Aberdeen. With an Engraving.

MOSES GUNN, apparently 35 years of age, was brought to the Aberdeen police office, on the evening of the 10th of June last, in a state of intoxication. On the following morning, after having had a small loaf of bread presented to him, of which he had not tasted, he was discharged. On the same evening, however, about 5 P. M. he returned of his own accord, and was locked in a cell. Between 8 and 9 he was discovered to be breathing heavily, and in a state of insensibility. At 9, I found him lying on his back, his body generally cold, and his pupils much dilated, and not contracting on the approach of a strong light. The pulse could not be felt at the wrist or in the cardiac region. Some faint convulsive motions of the arms and head, with an occasional deep inspiration, alone showed that life was not extinct. He died at half past 9.

Previous to his death a vein was opened, but no blood flowed beyond a few drops, which did not coagulate. Some stimulants, which were poured into his mouth, remained there without being swallowed.

On inquiry into this man's history previous to his appearance at the police station, I was led to believe that he had not had a single stated meal for a month previously. He had quarrelled with his family, who would not admit him to their house; and during the period I have mentioned, he had wandered about the city in a state of continued intoxication. It was currently reported that he had abstained from food, with the declared purpose of self-destruction, which, as far as I could ascertain, was the truth.

On the 13th, in consequence of an order from a magistrate, I proceeded in company with Mr Cadenhead, surgeon, to inspect the body for the purpose of reporting the cause of his death, when the following appearances presented themselves.

The integuments, generally, and the conjunctival coat of the eye, were of a deep-yellow colour; the pupils greatly dilated. The limbs were somewhat emaciated; while on them and around the neck of the *glans penis*, and at the front and bottom of the *scrotum*, were numerous superficial excoriations. The *urethra* had no appearance of gonorrhœa. The tongue was beyond the usual size, and lay forwards in the mouth. The head and neck were swollen considerably, and slightly livid. A thin yellowish fluid had escaped from the mouth and nostrils in some quantity. The *parietes* of the abdomen, and the folds of the *omentum* contained a moderate proportion of fat. The spleen was pale. The liver was of a buff colour, with small patches of the natural red interspersed. The viscus was larger and firmer than usual; its interior was of a gamboge hue, and its vessels were loaded with dark fluid blood. The gall-bladder was distended with thick inky bile, which stained the viscera deeply to some extent around, of a greenish-yellow. The smaller intestines were slightly inflamed in several places, and the veins in a state of congestion. The *duodenum* and *jejunum* were inflated with air. No feculent matter was found in the whole course of the intestines. The colon was much contracted, and its sigmoid flexure bound down in the *iliac fossa* by some old adhesions. The mucous coat along the greater part of the alimentary canal appeared softened, and in several places were inflamed spots of various sizes under that of a sixpence, where the coat seemed thin, though no raised margins gave evidence of these being ulcerations. In the cavity of the abdomen were a few ounces of bloody serum. The right kidney was of larger size than the left, but otherwise healthy. The bladder was empty and contracted, and its coats thickened. A few ounces of clear serum was collected in both the pleural and pericardial cavities. The lungs filled the chest, and concealed in a great measure the *pericardium*. When cut into, they were found gorged with black fluid blood, except at the bottom of the right lung, the lower lobe of which was hepatised and reddened in colour. The heart contained no blood, but its cavities were completely filled with *polypi* of a firm texture, that on the left side adhering pretty firmly to the lining membrane of the heart, and extending from the ventricle some way along the interior of the *aorta*. A little fat covered the surface of the heart, near and along the *margo obtusus*, from the base to the apex. The left ventricle was dilated, its walls thin, and the fibres pale.

The scalp was very vascular, and the blood fluid and dark. Much blood of the same character escaped from the longitudinal and lateral sinuses on removing the *calvarium*. The brain firm, and when raised, dark blood dropped from its cut vessels. In the lateral and third ventricles nearly four ounces of clear serum, and more than an ounce was collected at the base of the skull.

The stomach was removed, its orifices secured by ligatures. On opening it next day, it was found to contain about eight ounces of a dark-brown thick fluid, which was preserved and subjected to the appropriate tests for the more common narcotic poisons without discovering any trace of them.

The villous coat of the stomach was softened, and in some places inflamed, but not to any great extent. Over its entire interior surface appeared rounded dots of brownish-red, with well-defined margins, and slightly elevated above the surface. They varied in size from a grain of gunpowder to that of a split pea; in some places solitary, in others, particularly the larger ones, in clusters. Round these last there was a margin of red, not very bright.

The accompanying drawing, taken on the 15th, when decomposition had begun in the stomach, gives a tolerably correct idea of its appearance at that time.

In the above account of the morbid appearances in Gunn's case some of the consequences of death from starvation were certainly present. The larger intestines were contracted, the whole canal empty, the gall-bladder turgid, and the viscera, to some extent around it, tinged with bile. The *scrotum*, *penis*, and some parts of the limbs were excoriated; the latter were emaciated in some degree; while the skin, the *conjunctiva*, and some of the fluids, were of a yellow colour. Other marks said to be characteristic, were, however, wanting, as the injected *conjunctiva*, arid mouth and throat, withered lungs, contracted stomach, bile in the stomach and *duodenum*, empty blood-vessels, absence of fat, and unpleasant odour in the corpse. Independently, therefore, of the morbid appearances in the head, chest, and abdomen, we came to the conclusion, that the deceased had not died from starvation.

In regard, however, to one of the *criteria* of death from starvation, much relied on by medical jurists, viz. the absence of fat, I am apt to doubt how far it is to be trusted to. My reason for this will be understood from the brief outline of the two cases which follow.

A man about 60 years of age died in this place five years ago, in consequence of violence. At the time he was labouring under pneumonia, which was expected to prove fatal. He had the character of an habitual drunkard, and was reported to have lived chiefly on spirits for the last twelve years of his life. On examining the body in the course of a medico-legal investigation, the larger intestines, from the *cæcum* downwards, were contracted permanently to such a degree, as with difficulty to admit the barrel of a writing quill. In this situation of matters, it is scarcely to be supposed that digestion could have gone on well previous to his death, even setting aside the statement of his abstinence from regular meals, and yet this man's body was plump and fat.*

J. M. a girl of 23, had for years suffered under an enlargement of the spleen and other ailments. At length the stomach became so irritable, that for six weeks previous to her death she required to be supported by nutritive enemata, the stomach literally retaining nothing, not even fluids in small quantity during that time. The cause of death was found to be a spleen enormously enlarged, and of a texture very much resembling that of the liver. Here, too, the abdominal parietes, —indeed the body generally,—was *loaded with fat*, as if no disease had existed, though nutrition must have been for six weeks all but suspended, but for which circumstance she might have lived longer, as the stomach and other organs were healthy.

These cases may not appear to others so decisive of the question as they seem to me. To return, however, to the case of Gunn.

The morbid appearances within the head, coupled with the symptoms during life, and the negative evidence supplied by the analysis of the contents of the stomach, induced Mr Cadenhead and myself to report that this individual died from apoplexy.

There was no mention made by this person during life of his having been in ill health. The history which I procured was, however, too meagre to found much on this. What share the state of the stomach and heart had in the fate of the deceased, it would be rash to decide. Dr Craigie,† so far as I know, was the first to point out the connection between disease of the heart and apoplexy, the former morbid state favouring the occurrence of the latter.

Another question occurs, What effect had the irregular habits of the deceased in inducing the melanotic state of the stomach? That imperfect nutrition is at least occasionally a concomitant circumstance, the following case (related *elsewhere*,‡) so far as it goes, would seem to prove.

James Dow, 6 years of age, died in June 1827, of marasmus from diseased mesenteric glands; and in this case the peritoneal surface of the stomach, intestines, and abdominal parietes, were dotted at intervals with melanosis. The child passed the day before his death a considerable quantity of dark fluid by stool, and along with his urine. I had not an opportunity of examining this fluid, and therefore cannot say how far it resembled that of the former case, which appears to have been the same as that which was observed in the stomach of Lerminier's patient. (Archives Generales de Medicine, Mars 1826.)

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* The dissection was witnessed by the same gentleman who was present at Gunn's case.

† Ed. Med. and Surg. Journal, Vol. xix. p. 64.

‡ Lond. Med. and Phys. Journal, new Series, No. xix. p. 34.

At the risk of being thought tedious, in conclusion I may remark another circumstance in Gunn's case. Dr Christison, in his excellent work on Poisons, mentions the occurrence of death from apoplexy in six hours, as being the shortest known period. Gunn came to the police station at 5 P. M. and died in 4½ hours, while it is to be remarked that he was not observed to be ill till after 8 o'clock. I am inclined to think, however, that rapid death in apoplexy is not so unfrequent as Dr Christison supposes. On new year's day I was called to an old man, who, while on a visit to a friend, was seized in his house with apoplexy, and died in 5½ hours. A medical friend has lately given me the following particulars of a case which was fatal in 4 hours. A few days ago, a gentleman fell down in a shop and expired in 4 hours. On opening the body, it was found that the *vena galeni* had burst, and proved the cause of death from the effusion of blood into the ventricles.

Aberdeen, January 1832.

ART. IV.—*Observations on Natural Phimosis and its Effects; with a new Operation adapted to its removal.* By JOHN HOUSTON, M. D. M. R. I. A. Demonstrator of Anatomy and Curator of the Museum in the Royal College of Surgeons in Ireland, &c.

IN infancy the prepuce is always longer than the *glans*, and it is only at the period of puberty, when the penis becomes fully developed, that the *glans* acquires a length equal to that of the prepuce. In cases where the prepuce is too small to allow of the projection of the *glans* beyond its margin, the condition is that of natural *Phimosis*.

No inconvenience may result to a child with contracted prepuce if the orifice is sufficiently wide to permit the easy escape of the urine through it. But if the prepuce is very long, and its orifice excessively small, the individual is exposed to the inconvenience of having the urine retained within it. This fluid by its accumulation distends the prepuce, and forms a soft tumour, which increases when the infant makes water, and requires pressure to effect its evacuation. If the deformity be not remedied, the prepuce, by the irritation of the stagnant urine, is altered in texture ; it becomes enlarged and thickened, and its orifice more contracted; the interior becomes ulcerated, and its edges agglutinated; and the child may lose its life if an operation be not performed for its relief.

Another inconvenience to which a child is liable from being the subject of natural *phimosis*, is a deposit of calcareous matter between the *glans* and prepuce—an affection which gives rise to great suffering, emaciation, and fever.

The operation to be performed in cases of natural *phimosis* complicated with such evils as these, is—as in accidental *phimosis*—that of circumcision, in which a circular piece of the prepuce—proportioned to the extent of elongation and thickening, must be removed.

When *phimosis* continues until the individual arrives at manhood, numerous and serious inconveniences result from it; and the deformity ought to be remedied early in life before any of these inconveniences are experienced; for afterwards the affection becomes complicated, and may not admit so readily of an effectual cure.

Several operations have been proposed for the relief of natural *phimosis*—such as that of cutting through the *frenum* *—slitting up the prepuce longitudinally on the dorsum of the penis—or removing it altogether by circumcision. But having seen all these put to the test, and having observed that all of them either fail in their object, or are followed by deformity nearly as inconvenient as that for the relief of which they were undertaken, I have been led to the performance of an operation which radically removes the constriction, and at the same time leaves a condition of the organ perfectly free from disfiguration.

It is my purpose in this notice to describe some of the evils arising from natural *phimosis*, and to explain the nature of the operation which I have found most applicable to its relief.

1*st*, *The surface of the glans penis and inside of the prepuce is exquisitely sensible—generally in a state of excoriation, and often the seat of purulent discharges.*

By the narration of the following case, the symptoms classed under this head, together with the operation proposed for their removal, will be sufficiently illustrated.

Case 1. Mr J. W. ætat 19, complained to me on the 6th of April 1825 of the great inconvenience he has always laboured under from natural *phimosis*. He has never been able to draw back the prepuce, and no part of the *glans* can be seen except the orifice of the urethra. The urine getting under the prepuce on every attempt at making water gives rise to painful smarting. A thin, discharge frequently issues from between the *glans* and prepuce; and the whole penis is tender to the touch. He has never had sexual intercourse.

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* Operation proposed by Cloquet—See London Medical and Physical Journal, June 1826.

On the 20th of April I performed for the relief of this affection an operation, the details and result of which are as follows.

Under an impression that the constriction was confined to the margin of the prepuce, where the skin and mucous membrane unite, I cut off with scissors a narrow circular portion of this structure, upon which the skin readily retracted itself, leaving the mucous membrane in close contact with the *glans*, and satisfying me that in the latter structure alone lay the obstacle to the mobility of the prepuce. This internal membrane embraced the *glans* tightly after its margin was removed, and after the external skin was separated from it and drawn back. The object now to be effected was evidently to enlarge the circular extent of the internal membrane and if possible bring about the reunion of its margin with that of the skin. To effect this, I slit up the mucous membrane on the dorsum of the *glans* as far as its reflection at the *corona glandis* would allow, and drawing asunder the cut edges made by this incision, so as to form them into one straight line, fixed them by two sutures passed through the corners to the recently divided margin of the skin. I then turned back the mucous membrane underneath the *glans*, and secured it also by suture to the edge of the skin from which it had been separated by the first incision. By this plan the circular extent of margin to the mucous membrane was increased by double the length of the vertical incision, and the whole brought into a position favourable to reunion with the margin of the skin. To facilitate the adhesion, and to prevent any stretching of the parts in case of the supervention of inflammation, the whole prepuce was pushed back from the *glans*, and a piece of lint wrapped loosely round it.

The surface of the *glans penis* when exposed was found to be in a state of excoriation, and exquisitely sensible to the touch. The slightest contact of the finger gave such torture that the patient could not refrain from screaming aloud. From this circumstance the process of introducing the sutures was rendered the most painful part of the operation.

21*st.* The prepuce slightly swollen and painful; no fever, though he occupied a standing posture all the day. *Pulv. purgans. Lotio frigida.*

22*d.* The inflammation of the prepuce somewhat increased, and more extended along the penis; still walking about; kept from rest during the night by erections. *Repetantur medicamenta.*

23*d.* The state of the penis much as yesterday; no fever;

erections troublesome at night. *Haust. anodynus horâ decubitûs. Repetatur lotio frigida.*

24*th.* Feels much better; little uneasiness; had good sleep at night. The dressings being removed, the line of the incision could scarcely be discovered. It was sunk between two œdematous welts formed by the skin and mucous membrane of the prepuce, like those present in *paraphimosis.* In one place, however, underneath, where the apposition of the edges showed itself, union was found to have taken place. The only remaining consequence of the inflammation is the *œdema.*

27*th.* The whole wound united, except in the angle of the perpendicular incision of the mucous membrane; and even here there is not more than a line and a-half of ununited surface, which is in a healthy suppurating condition.

30*th.* Prepuce still œdematous; but, except from the great tenderness of the newly denuded *glans,* no inconvenience is experienced. All the excoriations are healed.

6*th May.* The *œdema* nearly all gone; every part of the incision healed.

15*th.* Scarcely a trace of the incision to be seen; the only marks are those made by the sutures, and that where the wound healed by granulation at the angle of the perpendicular incision in the mucous membrane. The prepuce remains retracted without causing any constriction, and without being in the slightest degree deformed. There is no excoriation, pain, or discharge; the morbid sensibility of the *glans* is much lessened; and the gentleman is most happy in his improved condition.

2dly, The act of coition in individuals affected with Phimosis is either performed with pain and difficulty, or cannot be accomplished at all.

Case 2. Mr ——, recently married, consulted me in the month of June 1831, on account of unexpected difficulties which he experienced in attempting to perform the duties of a husband. He is impressed with a consciousness of capability, but which is impeded by some tightness or obstruction in the anterior part of the penis. He has frequently had nocturnal erections and emissions, but which have always been attended with severe pain and a sense of constriction about the *glans.* These sensations he experienced in an unusual degree in attempting connection with his wife; and they so discouraged him, to use his own expression, that he was unable to consummate his marriage. On examination I discovered a very close natural *phimosis,* which I explained to him might be the cause of his impotency. He willingly submitted to an operation for its relief. I accomplished the operation in the manner described above, and during the performance of it, discovered precisely the same condition of parts as in the case of Mr J. W. A circular portion of the end of the prepuce was excised with scissors, on the completion of which the exterior skin admitted easily of being pushed back, leaving the mucous membrane in a state of such perfect apposition to the *glans*, that it appeared as if glued to that texture. A vertical incision was then made in the mucous membrane as in the former case; the edges of this cut were drawn asunder, so as to make a straight line with the rest of the margin of the mucous membrane; and the increased circle thus formed was fastened by three points of suture to the cut edge of the integuments. The same state of excoriation and exquisite sensibility in the *glans* was noticed as in the former case when deprived of its preputial covering.

The operation was followed by the same train of symptoms, as those in the case of Mr J. W. For several days there was considerable inflammation attended with *œdema* of the penis; febrile reaction, and erections at night. Part of the wound suppurated, but the greater proportion healed by the first intention; In a week the sutures were removed, and in three weeks the whole swelling had subsided, and the wound was perfectly cicatrized. For several months, however, the newly denuded *glans* continued so morbidly sensible, that the slightest touch gave pain; but by the permanent exposure it gradually lost this tenderness, and the gentleman had much gratification, in the experience that the object of the operation was fully accomplished.

3dly, The supervention of inflammation in cases of natural or accidental Phimosis may give rise to accumulation of matter between the prepuce and glans, bearing all the characters of an abscess.

Individuals affected with *phimosis* are more liable to the reception of syphilitic or gonorrhœal diseases than others not so circumstanced, on account of the lodgement which is afforded to the infectious matter, and on account of the greater sensibility of the mucous membrane of this part of the organ. For the same reasons, inflammatory affections, unattended with any venereal characters, are in individuals so circumstanced very readily excited, and give rise to most distressing consequences.

Ulcers, or excoriations of the glans, inside of the prepuce, or *corona glandis*, secrete matter, which, not finding ready egress, accumulates in the place where it is formed. Inflammation is thereby excited, and, extending to the prepuce, produces great pain, redness, and tumefaction of the organ, with severe symptomatic fever.

In the early stages of such an affection, no matter whether the sores be syphilitic or otherwise, the treatment should be, to wash out and prevent the accumulation of matter between the prepuce and *glans* by injections of tepid water or milk; and to subdue the inflammatory action by aperient medicines, the recumbent posture, and the application of leeches and fomentations to the part affected.

If the inflammatory symptoms subside under this treatment, the ulcers may be got to heal by appropriate remedies; and the prepuce brought into a fit state for undergoing the operation proposed above.

But if, on the contrary, the fever increase—if the inflammation produce greater tumefaction of the prepuce, and extend more into the body of the penis, causing priapism and difficulty of expelling the urine—and especially if any fluctuation can be detected under the prepuce—besides the use of venesection, purgatives, antimonials, &c.—an incision must be made into the prepuce opposite the *corona glandis*, so as to liberate any confined matter. It is not necessary to carry this incision through the whole perpendicular extent of the prepuce, because, after the evacuation of the matter and subsidence of the inflammation, it will heal up like the opening of an ordinary abscess, and leave no disfiguration behind it. But special care must be taken to operate at an early period of the inflammation; for if this precaution be neglected, serious consequences are likely to be the result. A sloughing of the integuments will ensue for the evacuation of the matter, and through the opening thus formed, which is generally on the *dorsum* or sides of the penis, a protrusion of the *glans penis* may take place. If the slough have been so small that the opening left by it constricts the *glans*, the projecting portion of this organ becomes excessively turgid, livid, and painful; and if not relieved from the strangulation either by farther sloughing of the integuments around it, or by the knife of the surgeon, it becomes flaccid, black, and insensible, and is thrown off in the state of sphacelus. But even if the slough have been sufficiently extensive to permit the passage of the *glans penis* without strangulation or sphacelus, a most unseemly and inconvenient state of the organ remains after the subsidence of the inflammation. It presents a kind of double extremity, one of tumours consisting of the denuded and displaced *glans*, the other formed of the pendulous and disfigured prepuce.

In cases of this nature, when the first consequence alluded to, viz. constriction and sloughing of the *glans penis*, is likely to be the result, an incision should be made into the prepuce from the artificial opening, strangulating the *glans* down to its free margin. By this operation, assisted by the most active antiphlogistic treatment, locally and generally, farther mischief may be prevented.

But in cases where the *glans* does not appear to suffer strangulation by the newly-formed opening through which it protrudes, the operation of completing the division in the prepuce had better be deferred until the inflammatory state of the organ have subsided, when, as in the other case, it will be proper to perform circumcision, for the purpose of getting rid of the disfigured and incommodious prepuce.

With respect to the management of ulcers which in cases of this nature have given rise to acute inflammation, they are generally to be treated as local affections, without reference to the question whether they are specific or not. We cannot during the inflammatory state arrive at any conclusion on this point; at all events, the same treatment will apply to both;—and moreover, the recorded opinion of a gentleman of great experience, "that a violent inflammation of the penis quickly supervening on chancres may effectually destroy their syphilitic nature, and convert them into ulcers purely local," * should reconcile us to the experiment of treating them all as simple sores, and leaving any farther consideration about their syphilitic characters to be decided by subsequent symptoms.

4thly, The forcible retraction of the prepuce in cases of natural Phimosis often gives rise to Paraphimosis.

Where the orifice of the prepuce is unnaturally small, and by force has been drawn back to the *corona glandis*, it acts like a ligature on the penis, and, if not removed, may produce inflammation and mortification of part of the organ.

The occurrence of *paraphimosis*, as supervening on natural *phimosis*, is sometimes produced in the act of coition. It is also of frequent occurrence in boys who unheedingly pull back the prepuce and are unable to return it again over the *glans*. In either of these cases the symptoms will be the same. The glans is swollen, tense, shining, and painful. The prepuce is œdematous, and its mucous membrane everted. There is difficulty in making water,—the penis is in a state of demi-erection, the pulse is quickened, and the face flushed from the pain.

Sometimes the prepuce may be replaced on the *glans*, and the stricture relieved by dexterous management with the hand. At other times, when this cannot be accomplished, an incision to divide and relax the strangulation may be necessary.

To accomplish the reduction by the former mode of proceeding, the penis ought to be immersed for a short time in cold water, with the view of causing a recession of the blood from its turgid vessels, and the *glans* should be squeezed with the fingers to further the same object, and thereby lower the tumefaction. An attempt should then be made to draw forwards the prepuce with the points of the fingers of both hands applied around the penis, while at the same time the thumbs should be exerted in pressing back the *glans* and enforcing its return through the narrow aperture by which it is constricted.

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* Mr Todd, Dublin Hospital Reports, Vol. ii. p. 153.

Another mode of manipulation is that of grasping the penis with the left hand (the radial margin directed towards the *glans*,) and with it drawing forwards the skin, at the same moment pushing back the *glans* within the constricting prepuce. Professor Wilmot recommends the interposition of a fold of linen between the left hand and the penis, with the view of holding it more securely,—a measure which I have found particularly useful. The pressure should be continued for some time steadily and without interruption, as it will thereby be much more efficacious than if exerted irregularly and by starts. Great pain is usually produced by this operation, and the patient sometimes faints during its performance; but I have seen the reduction effected with ease during the fainting state, which could not be accomplished by considerable force previously to its occurrence.

Notwithstanding the pain inflicted, the operator must not be deterred from using proper efforts to effect the return of the prepuce to its natural place, and, if unsuccessful, the stricture must be relieved by the use of the knife in the manner to be hereafter described.

If the *paraphimosis* have not been relieved, inflammation of the penis will quickly ensue. The tumefaction of the *glans* increases; it becomes more tense, shining, and painful to the touch. The everted inner membrane of the prepuce is gorged with serum, and has the form of a circular swelling, behind which the constriction will be found. Beyond this period all attempts at reduction by pressure with the hand must be desisted from, as they will only aggravate the symptoms without any likelihood of being useful. Symptomatic fever is quickly excited, and, if the stricture be not taken off, mortification of the *glans* will be the consequence. The sloughing generally commences in the line of the prepuce forming the constriction, and, if sufficiently extensive to relieve the *glans*, this part of the organ may be thereby saved, but both the prepuce and *glans* may be lost by sphacelation. It sometimes happens, even when both these parts escape, that the pressure of the stricture on the lower part of the penis causes ulceration of the *urethra*, and produces an opening in that tube which can never afterwards be healed, and through which the urine will continue to be discharged during the remainder of the patient's life.

To obviate all these evils, a timely incision must be made into the stricture, either in one or other of the following modes.

First, The knife may be directed on it from without, in which case, as the tight edge of the prepuce lies deeply imbedded behind the everted mucous membrane, this part must be carefully pressed forwards, in order to expose the offending part, which, when seen, may be easily cut across by a scalpel or lancet.

Secondly, When the stricture is so deeply sunk in the integuments as not to admit of exposure, it may be relieved by a bistoury passed upwards between the *glans* and prepuce, and then turned forwards, so that its edge shall press upon, and divide the tightened band from the inside. The cause of the engorgement and inflammation of the organ being thus removed in good time, the antiphlogistic treatment exerted both generally and locally, will soon restore the parts to their former condition, without the occurrence of any very serious bad consequence; and the question as to propriety of performing the operation recommended above, or some other like it, for the radical cure of *phimosis*, may then be very properly considered by both the practitioner and patient.

ART. V.—*Case of Cæsarean Section.* By WILLIAM CAMPBELL, M. D. Fellow of the Royal College of Surgeons, Member of the Medico-Chirurgical Societies of London and Edinburgh, &c. &c.

MRS FERGUSON, a woman of rather spare habit, aged about 30, and the mother of five children, was seized with the usual symptoms of the epidemic cholera, under an aggravated form, on the morning of Monday July 8th, and was shortly thereafter visited by Alexander Watson, Esq. surgeon to one of the cholera hospitals. On the morning following, as it was but too obvious that the patient would soon fall a victim to her malady, and as she was in the last month of pregnancy, Mr Watson paid me the compliment of consulting me regarding the propriety of making an attempt to save the fœtus, the motions of which, by the parent's account, had been felt between 1 and 2 A. M. of this day. This latter information induced me to recommend that the sufferer should be watched, and the earliest opportunity embraced after her decease to emancipate the fœtus. The woman was anxiously attended until a little past 10 in the morning, when she expired; and four minutes scarcely elapsed betwixt that event and the complete extraction of a male fœtus, somewhat larger than the ordinary size, which, however, appeared to have been dead some days even, as portions of the cuticle had separated from the left thigh, and from the abdomen, around the umbilical region.

The atlantal and sacral extremities of the parent were of a purple hue, and the parietes of the abdomen exhibited a lighter shade of the same colour. There was much turgescence of the superficial veins of the lower limbs.

The incision in the abdominal parietes was made about an inch to the left side of the *linea alba*, when the uterus, unaccompanied by any other viscus, presented itself. Its peritoneal coat appeared remarkably vascular, and of a purple colour; and when its substance was divided it bled profusely. The parietes were not by any means so much attenuated as I expected to find them. No portion of intestine protruded when the abdominal cavity was laid open, which may be ascribed to the action of the diaphragm having ceased. The fœtus was in a natural position, its spine was placed towards the left side of the abdomen, and the placenta adhered to the corresponding side of the uterus. There was nothing unusual in the general aspect of the fœtus.

After the removal of the uterine contents, I was particularly struck at the rapidity with which the organ contracted; for in a very few minutes thereafter, it was reduced to the size in which we find it when a woman dies two or three days after parturition. A horizontal section of the left ovary displayed a *corpus luteum* of the size and form of the vaccine vesicle.

I find by some of the periodical works from the continent, that several attempts, under similar circumstances, have been made at Vienna to save the fœtus, but unsuccessfully. By Mr Underwood, who, with Mr Gordon, surgeon, and Mr Burridge, my assistant, was present on the occasion, it was afterwards ingeniously suggested, that the want of success in such cases, in so far as the child is concerned, might probably be ascribed to the energies of the nervous and vascular systems being in so prostrate a condition from the earliest stages of cholera.

It cannot occasion much surprise that we should so rarely succeed in saving the fœtus when a female dies undelivered in consequence of any severe indisposition, since, whatever be the morbid condition of the system, the infant must unavoidably experience its influence; for many facts, too familiar to every man in practice to require being mentioned here, clearly prove, that the developement of the fœtus while *in utero* is to a great extent dependent on something which it imbibes from the system of the parent.

A phenomenon, however, of which I was once an eye-witness, and of which I find an example related by M. Velpeau of Paris, in his Elements of Midwifery, recently published, has led me to think, that where a pregnant female in perfect health is suddenly destroyed by accidental violence, the section of the abdominal and uterine parietes, quickly and dexterously resorted to, ought, in the majority of instances, to save the fœtus. I allude to the case of a woman in South Richmond Street, to whose assistance I was called in the summer of 1826; and who shortly after my arrival gave birth to an *entire ovum* in the sixth month. The fœtus was alive; but as at this period it could not be reared, and as the membranes were entire, it occurred to me that it would be interesting to determine how long it could live within its envelope, without deriving any advantages from its parent, and very little, if any, from the atmospheric air. The ovum was placed in a large plate upon a table, in a small warm rather confined apartment; and all present had an opportunity of observing the fœtus turn itself occasionally in the *liquor amnii*, for the space of twenty minutes, when its movements finally ceased. The case of the talented M. Velpeau, already alluded to, is of a similar nature. Less than a quarter of the time which the fœtus continued to live in my case, would enable a man of nerve to accomplish its emancipation after the death of the parent.—Dr Blundell and Mr Green, at St Thomas' Hospital, London, extracted, by the Cæsarean operation, a living fœtus from the abdomen of its parent, at the lapse of a quarter of an hour after her decease, occasioned by the wheels of a stage-coach having passed over her body.—A young friend of my own, some years ago, while on a sporting excursion, killed a hare, and without taking further notice, carried it home; and in about half an hour after it was shot, an unusual jumping movement was observed within the abdomen; when the sportsman immediately laid open the cavity with his pen-knife, and emancipated a leveret, which lived for more than a year afterwards, and had been seen by many persons, some of whom came expressly from a considerable distance to view this wonderful phenomenon.

Edin. 4, *Picardy Place, July* 1832.

ART. VI.—*Essay on Tubercles.* By NATHANIEL ROGERS, M.D. Senior President of the Hunterian Medical Society, and Corresponding Member of the Medico-Chirurgical Society of Dublin.

THE term *tubercle*, the diminutive of *tuber*, is met with in the writings of Galen; in which, as well as in those of succeeding authors, it was made to comprehend small tumours of various descriptions, having little in common but their form. It is now, however, from the greater accuracy of medical nomenclature, applied only to a morbid production of a particular kind; and it is in this restricted sense that we are now to consider it. Its nature and seat have been studied by various observers, with great zeal and assiduity; but the widely discordant opinions they have expressed, both as to its origin and every step of its progress, establish at once the difficulty of the subject, and the necessity of farther research. With opinions so conflicting from observers so competent, I shall aim rather at forming a digest of their sentiments on the most prominent points, than of pronouncing with confidence on any. To deliberate, rather than to dogmatize, is the part of the impartial inquirer.

Bayle was the first who described the appearance and developement of tubercles, with any thing approaching to accuracy; but to Laennec we are indebted for a still more lucid delineation. The most common form in which they invade the lungs, is that to which he gives the name of *miliary*. In this variety they resemble small grains, equalling or somewhat exceeding the size of a millet seed, rather less consistent than cartilage, usually grey and semitransparent, but sometimes wholly transparent, and destitute of colour. In this respect, however, they are found to vary from contingent circumstances. Thus in jaundice, their surface acquires a yellow cast, especially when seated in the liver. If in the vicinity of gangrene, they acquire a dirty-brown stain. They are sometimes partially stained or spotted by the black pulmonary matter; to a slight admixture of which, Laennec thinks it probable they are indebted for the greyish colour, which distinguishes their first or semitransparent stage. He is confirmed in this opinion, by having observed that the transparency of these miliary granulations, is in the inverse ratio to the quantity of black pulmonary matter. This colouring is very distinct in the tubercles which are formed in the bronchial glands; where it has been compared to the shading of a crayon drawing, very deep in one part, and gradually becoming less so as it recedes from that point. With respect to shape, they appear round to the naked eye; but if examined with a lens, they are stated to present irregular angles.*

Thus far Laennec. But Andral denies that tubercles are transparent in their first stage; alleging that they have never been found to present that appearance, in any other parts of the system, occasionally the seat of tubercle. He asks why they are never seen transparent in the lymphatic ganglions, where tubercles can be followed in all the stages of their developement; or in the brain, the liver, the spleen, the submucous, subserous, or intermuscular cellular tissue. He refers, indeed, to one case related by Chomel,[*] where small globular bodies, resembling in consistence the crystalline lens, were found in the brain, lungs, liver, spleen, kidneys, and the phrenic portion of the peritoneum. He infers, however, from the description, that they differed essentially from the miliary tubercle of Laennec.[†] The last named author, although he does not bring forward any instance of transparent granulations in the lymphatic glands, remarks that the tubercles which form there, are observed to be surrounded by a semitransparent matter of a greyish tint, indicative of the approaching tubercular transformation of the gland. He refers to Bayle's 12th case, where the spleen was found filled with small greyish tubercles. He considers their developement in other organs as sufficiently confirming his opinion; alleging, that on the surface of the pleura or peritoneum, they are sometimes found either partially or wholly transparent, and either colourless or with a greyish tint. Sometimes they have an opaque yellow spot in the centre, while at others they have become altogether tubercular; all these different stages being not unfrequently met with on the same membrane. The same appearances, he remarks, may be traced in the intestinal ulcers of phthisical subjects. Finally, he lays it down as a general rule, especially worthy of consideration, that, with the exception of melanosis, all the accidental productions which have no analogy with the natural textures of the body, are in their first stage hard and semitransparent.[‡]

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* Forbes's Laennec, 3d edition, p. 278, 281, and 282.

But Andral does not consider that any support can be gained, from the small grey bodies, which occasionally stud the surface of serous membranes. These he regards not as tubercles, but as rudiments of false membrane. The granules of a similar appearance, which mucous membranes sometimes present, he considers to be hypertrophied follicles. All these bodies, how different soever in nature and origin, are known by the generic term *granulation;* and in similar granulations, when they occur in the lungs, he allows that tubercular matter is often deposited, because he regards them as the product of partial pneumonia; the irritation attending which, he considers very favourable to the secretion of tubercle. What Laennec, therefore, regards as the first stage of tubercles, Andral considers as only the nidus for their formation.[§] He further objects, that these granulations are very frequently developed in the inferior lobes of the lung; and, therefore, if Laennec's opinion were correct, we might expect to find tuberculous excavations towards the base of the lungs, more frequently than they are known to occur.[*] Bayle considered that they differed essentially from tubercles, and were of a cartilaginous nature;[†] on which Laennec remarks, that if this were true, they would sometimes become ossified.[‡] Chomel does not contend for their cartilaginous structure; but considers that the fact of their never coalescing, sufficiently proves their non-identity with tubercles.[§]

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[*] Article Granulation, in the Dict. de Medecine.

[†] Anatomie Pathologique, translated by Townsend and West, Dublin, 1829. Vol. i. p. 509-10.

[‡] Forbes's Laennec, 3d edition, p. 280 and 281.

[§] Anatomie Pathologique, (translation,) 1829, Vol. i. p. 510 and 511.

On the other hand, Laennec has for his partisan a writer of greater authority on these subjects, than either of his opponents. M. Louis has investigated, with his accustomed assiduity, this as well as every other point connected with the subject; and adduces several reasons for giving his suffrage to Laennec. He has found the granulations in question, as in the case of tubercles of a less disputed character, more numerous towards the summit than the base of the lungs; and when confined to one part, it was always the superior portion. Their state of advancement, too, was always in correspondence with their place in the lungs; so that, tracing them from below upwards, they were found to be first grey and semitransparent, then with a yellow spot in their centre, and at last wholly transformed into a yellowish-white coloured matter,—in fact, into crude tubercles. Granulations and tubercles generally accompanied each other. In the lungs of two patients only, were the latter found without the former, and only five times were the former observed without the latter; and even in some of these the central transformation had commenced. "These facts," he concludes, "appear to establish incontestibly the conversion of grey semitransparent granulations into tubercular matter."

Sometimes, as in his twenty-ninth case, the grey matter showed itself in another form; that of irregular masses, varying in size from one to three cubic inches, having in the midst a great number of yellowish-white points. In other cases, again, the grey matter was almost wholly replaced by tubercular masses, only a few remnants of the former being left. Again, he considers, in direct opposition to Andral, that evidence of the fact in dispute may be obtained, though more rarely, from other organs; in proof of which he advances his seventh case, where a tubercular mass, into which four-fifths of the great omentum and mesocolon were converted, inclosed several portions of semitransparent grey matter. "Is it not probable," he asks, "that the latter would sooner or later have undergone the tubercular transformation?" Tubercular excavations of any considerable size, he almost always found surrounded by a certain quantity of this grey matter; and an instance of its very singular mode of disposition, is given in his forty-sixth case; where it formed three parallel horizontal zones, an inch in height, separated by portions of slightly engorged lung of equal dimensions. Whitish or yellowish spots, in very great quantity, were disseminated through these zones, sufficiently indicating their commencing transformation; so that, whether appearing under the form of individual granulations, or of irregular masses, the grey matter sooner or later becomes tubercular.

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[*] Clinique Medicale, 2me edit. Tome ii. p. 5.

[†] Recherches sur la Phthisie, Paris, 1810, p. 48.

[‡] Forbes's Laennec, 3d edition, p. 280.

[§] Chomel, in the 10th Volume of the "Dictionnaire de Medecine," p. 345.

The rapidity with which phthisis sometimes runs its course, might lead to the conclusion, that tubercles may occasionally be deposited in a crude state, without being preceded by the grey matter; and to this opinion some countenance appears to be given, by the case of a young girl; in whom, on the 35th day of the disease, he found a very large quantity of softened tubercular matter, part having already been expelled. Nevertheless, in the same lung, grey matter existed; and in other cases,. also very rapid in progress, grey matter was found in the centre of a tuberculous mass. This was observed in his thirty-sixth case, where the disease terminated fatally on the 48th day; and where the superior lobe of the left lung, was almost wholly converted into a softened tubercular mass, inclosing several portions of grey matter. This might certainly have been developed after the former; but the reverse seems more probable. Louis, however, goes so far as to admit, that tubercles might sometimes be primarily deposited in the lungs in a crude state; since, with only two exceptions, that is, the form in which they have appeared to him to be developed in other organs.*

On the subject of these disputed granulations, Andral gives a summary of the prevalent opinions. Some follow Bayle's hypothesis, that they are an accidental production *sui generis;* others, with Laennec, consider them as only the first stage of tubercles; while a third party follows Morton, Portal, and Broussais, in looking upon them as lymphatic glands in a state of enlargement. A fourth opinion is that entertained by Andral himself; who, though at one time disposed to consider them as lymphatic glands, has been led by further examination to abandon that opinion. He avers that these bodies, though now white or grey, and of a cartilaginous firmness, were at first red and soft; and, by examining these, he is led to the conclusion, that they are engorged air-cells; which, on being cut, retain their spherical shape, and give the appearance of granulations, while the surrounding healthy cells collapse.†

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* Recherches Anatomico-Pathologiques sur la Phthisie, Paris, 1825, p. 2 to 7.

† Clinique Medicale, 2me edit. Tome ii. p. 6 to 12.

Andral also denies that tubercular matter, on its first appearance, has the consistence attributed to it by Laennec; but compares it to a drop of pus, easily removed by the back of the scalpel. The fluid parts being absorbed, it gradually acquires consistence, he says, by a kind of crystallization. Indeed, he expressly declares his opinion in another place, that tubercular matter is to be considered a particular kind of pus; alleging, that he has more than once seen the *pia mater* infiltrated with purulent matter, which gradually changed its appearance, assumed a more solid form, and became tubercular. To this mode of formation he attributes the roundish form of a tubercle; observing, that every secreted liquid, if pressed equally on all sides, will necessarily assume that appearance, as is generally seen in abscesses.*

In his more recent work, however, (the Anatomie Pathologique,) he appears to have somewhat modified this opinion. He is there referring to the researches of M. Cruveilhier; who, on examining the bodies of various animals, found among hard white tubercles other bodies, differing from them only in being fluid; whence he concluded that the latter were only tubercles in their first stage, and that, in fact, the origin of tubercles is always puriform. Some confirmation appears to have been lent to this opinion, by the experiments of Trousseau and Leblanc, who found in the lungs of horses well-formed tubercles, intermixed with purulent points. But Andral, with true philosophic caution, draws a distinction between what is constant and what is accidental; and, while admitting the probability that tubercle may be fluid at the moment of its deposition, considers it, nevertheless, as not sufficiently established. He cautions the reader not to suppose, that every product of secretion must of necessity be primarily fluid; for the cuticle, among others, never appears but in the solid state; and it is certain, that, whatever be their origin, and however small their size, that is the form in which tubercles are observed.†

The fluid origin of tubercles is likewise advocated by Dr Baron of Gloucester; but with this addition, that the simple vesicle, in which they are stated to take their rise, he considers to be a hydatid. This hydatid he conceives to be the fruitful parent of tumours, in all their frightful variety, only modified according to the region where they appear, and the constitution attacked.‡ But this theory will hardly bear examination. Dr

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* Clinique Medicale, 2me edit. T. ii. p. 2, 12, 13, 16, and 17.

† Townsend and West's Translation of Andral's Anatomie Pathologique, Dublin, 1829, Vol. i. p. 511-12.

‡ Enquiry illustrating the nature of Tuberculated Accretions, 1819; and Illustrations of the Enquiry, &c. 1822.

Abercrombie made various experiments on the subject; from which it results, that tubercular matter differs essentially from the contents of a hydatid; the former being found to yield a very great proportion of its weight of albumen; while the latter consists of water, with a trace of salts, and a little muco-extractive.[*] But the account which Dr Baron gives of the further progress of his hydatid, is sufficient to seal its fate. Reversing the order described by Laennec, he considers that a process of gradual inspissation takes place, without any subsequent softening. A moderate acquaintance with the actual morbid appearances, is sufficient on this point to secure us against error. "Dr Baron," it has been remarked, "has betrayed not only a singular misapprehension of the pathology of the diseases of which he treats, but actually not a due acquaintance with the natural history of hydatids themselves, on which all his opinions repose. He reproaches Laennec with indulging in unnecessary minuteness in his description of tubercles; forgetting, in his zeal for the hydatid doctrine of disease, that Nature's forms may be very diversified, and that it is the privilege of theory only to be just as simple as the theorist could desire."[†] Hydatids, it would appear, are far from being sufficiently common for the Doctor's purpose; for out of 6000 subjects, Andral met with only five cases.[‡] In the lower animals, however, their appearance is much less rare; and their not unfrequent co-existence with tubercles seems to have led Dupuy to the conclusion, that they necessarily precede them; and are, in fact, as Dr Baron has suggested, only tubercles in the first stage. M. Dupuy's situation, as Professor at the Veterinary College, Alfort, has furnished him with numerous opportunities of prosecuting the subject; and in various of the Ruminantia, especially the cow, he has frequently found hydatids, surrounded by a layer of tubercular matter, which he conceives to have been formed by the cyst of the hydatid.[§] The same appearances have been observed by Andral in the lungs of phthisical horses;[||] and in one case also in a rabbit, the liver of which was thickly sown with hydatids in different states; some perfect; others surrounded with a layer of matter analogous to tubercle; and others again presenting only gelatinous fragments, in the midst of tubercular matter, which had gradually usurped their place.[¶] In the disease to which swine are liable, called *measles*, serous cysts and tubercles are usually found together; the former being often more numerous than the latter.* But in all this he sees nothing, but the somewhat varying products of a morbid secretion. † And, certainly, from their accidental complication, we are hardly warranted to infer the necessary dependence of the one on the other. Were that the case, we might surely expect to find them more frequently in company; whereas, in all his extensive experience, Andral has found them only once co-existent in the human subject. ‡ The fact previously mentioned, of a hydatid being sometimes surrounded with a zone of tubercular matter, is nothing more than what takes place in the case of other foreign bodies. Many of my readers will have seen globules of mercury, a few days after injection into the *bronchia* of a rabbit, furnished with a coating of matter, in every respect analogous to a crude tubercle. In the case of hydatids themselves, they are sometimes surrounded by other matters; for Andral has seen them in the midst of blood, and pus, and liquids of various kinds, and sometimes the hydatid only existed in the form of debris §. It will not be contended that a deposition of blood or pus, is always preceded by a hydatid. Even granting that the cyst of the latter might occasionally secrete a substance, in its physical characters more or less resembling tubercle, that is far from proving that the existence of a tubercle necessarily presupposes a serous sac. Matter resembling tubercle, has occasionally been found in lymphatics and in mucous follicles; but neither of these will be insisted on as indispensable requisites. ||

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[*] Edinburgh Med. Chir. Trans., Vol. i. p. 682, &c.

[†] Dr Mason Good's Study of Medicine, Edited by Samuel Cooper, 3d edition, Vol. iii. p. 260.

[‡] Clinique Medicale, 2me edition, Tome ii. p. 406.

[§] Dupuy's Traité de l'Affection Tuberculeuse.

[||] Anat. Pathol. (translat.) Dublin, 1829, Vol. i. p. 507.

[¶] Clinique Medicale, 2me edition, Tome ii. p. 25.

Having thus canvassed, at some length, the several opinions maintained by different pathologists of eminence, as to the first stage of tubercles, let us now follow their progress a step farther. The first indication of their quitting the miliary state, is the appearance of an opaque yellow spot in their centre, as described by Laennec ¶ and Louis; ** or, as Andral contends may occasionally happen, on the surface. †† This speck gradually increases, till it involves the whole tubercle; which then constitutes a yellowish-white soft mass, and is called *crude*. During this time, however, the tubercles have increased in size, and the contiguous ones coalesce. A single tubercle may acquire a size varying from that of a cherry-stone to that of an almond; but the

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* Anat. Pathol., (transl.) Dublin, 1829, Vol. i. p. 509.

† Clinique Medicale, 2me edit. Vol. ii. p. 26.

‡ Anat. Pathol. (translat.) Dublin, 1829, Vol. i. p. 507.

§ Clinique Medicale, 2me edit. Vol. ii. p. 26.

|| Anat. Pathol. (transl.) Dublin, 1829, Vol. i. p. 508.

¶ Forbes's Laennec, 3d edition, p. 278 and 279.

** Recherches sur la Phthisie, Paris, 1825, p. 3.

†† Clinique Medicale, deuxième edition, Tome ii. p. 5 and 6.

union of several tubercles will produce masses of much greater magnitude [*]. But the growth of tubercles is another subject of dispute. Laennec says they grow by intus-susception; [†] but Andral very properly remarks, that this could only be the case with an organized living body. They must therefore grow or increase in bulk, like other inorganic substances, by accretion or juxtaposition. The same cause which led to their being deposited at first, equally leads to their subsequent augmentation. [‡]

Having arrived at the second or crude stage, they may remain stationary for a very indeterminate period. Laennec states it to be very variable [§]. According to Broussais, they may remain for a long while unchanged. [||] Louis places the commencement of the next, or third stage, at an interval sometimes of from 20 to 40 days from the invasion of the disease, but generally much more protracted. [¶] Andral states that it varies from a few weeks to many years. [**] He also raises an interesting question, as to whether absorption can take place in this the crude state. Though compelled to leave this question undecided, yet he has sometimes met with tubercles of so singular a form, as to lead to the suspicion of their having sustained a partial absorption. [††]

Independently of absorption, there are two changes which crude tubercles may undergo. The first is the *cretaceous* transformation; which appears to consist in the substitution of the salts of lime, for the greater part of the animal matter, of which tubercles, in their crude stage, are chiefly composed. This will be seen from the following analysis of M. Thenard. In 100 parts of *crude* tubercle, he found 98 of animal matter; while the rest consisted of phosphate and carbonate of lime, muriate of soda, and oxide of iron. But in *cretaceous* tubercles the proportions were reversed. This change is considered to take place when tubercles, long remaining in the chronic state, have produced a kind of endurance in the system; so that the symptoms which announced their presence, have gradually ceased to be urgent. [‡‡] It does not appear improbable that this might have been the morbid alteration, elevated by Bayle to the rank of a separate disease, under the title of Calculous *Phthisis.*

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[*] Forbes's Laennec, 3d edition, p. 278 and 279.

[†] Ibid.

[‡] Anat. Pathol. (transl.) Dublin, 1829, Vol. i. p. 514.

[§] Forbes's "Laennec," 3d edition, p. 283.

[||] Histoire des Phlegmasies, ou Inflammations, Chroniques, 4me edition, Tome i. p. 26.

[¶] Recherches sur la Phthisie, Paris, 1825, p. 10.

[**] Anat. Pathol. (transl.) Dublin, 1829, Vol. i. p. 513.

[††] Ibid. Vol. ii. Dublin, 1831, p. 549.

[‡‡] Ibid. Vol. i. Dublin, 1829, p. 516 and 517.

But by far the most frequent alteration is that of *softening;* which constitutes the third stage of tubercle. This change of consistence is not attributed by Andral, any more than its increase in bulk, to the tubercle itself. As in the case of other foreign bodies, a process of irritation is set up, secretion of purulent matter ensues; and this, intermixing with the tubercular matter, mechanically separates its particles, and produces what he calls the purulent transformation. To this rational explanation a difficulty presents itself, in the fact stated both by Laennec * and Louis†, that the process begins in the centre of the mass. Andral allows that "it certainly does so in a great many cases; but they *may* also begin to soften in other parts, and especially towards their surface;"‡ an explanation which takes little from the force of the objection.

But in what manner soever the softening may be effected, the matter in this state will present one of two appearances; either that of a thick inodorous yellow pus, or that of a fluid resembling whey, having suspended in it small portions of opaque matter, of a caseous consistence. § Finally, this matter finds its way into the bronchia and is expelled. This is effected, according to Andral, by the process of irritation continuing till, as in the case of any other foreign body, it leads to a solution of continuity, and the expulsion of the offending substance.‖ We have now what was once called an ulcer of the lungs, but latterly a tuberculous excavation. The latter name, in contradistinction to the former, was given to it by Laennec, from the supposition that no corrosion of the surrounding tissue takes place, but that it is merely pressed aside and condensed. ¶ But this view of the case is hardly compatible with the phenomena, observed in cavities of any considerable extent. Opening into these cavities will generally be found the mouths of bronchial tubes, which, as Laennec himself states, "are cut directly across in a line with the internal surface of the excavation; and their direction is such as shows them to have originally crossed this space."** Is not corrosion here sufficiently evident? Louis considers it plainly manifest, from various circumstances, that excavations cannot exist without the previous distinction, more or less considerable, of the pulmonary substance.[*] Andral's testimony on this point is still more decided. "The cavities," he observes, "are not formed by the tissue of the lung being forced back and condensed; but the parenchyma is really destroyed, and a true ulcer formed, which goes on constantly increasing in size, until its dimensions far exceed those of the original tuberculous mass."[†] But, however this controversy may be decided, *tuberculous excavation* will still be a convenient term, both as indicating its origin, and distinguishing it from an ulcer, the result of pneumonia.

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* Forbes's Laennec; 3d edition, p. 283.

† Recherches sur la Phthisie, Paris, 1825, p. 10.

‡ Anat. Pathol. (Transl.) Vol. i. Dublin, 1829, p. 516 and 517.

§ Forbes's Laennec, 3d edition, p. 283. Andral's Anatomie Pathologique, (transl.) Vol. ii. Dublin, 1831, p. 545.

‖ Anat. Pathol. (transl.) Vol. i. Dublin, 1829, p. 515.

¶ Dr Stokes on the Stethoscope. Edin. 1825, p. 94.

** Forbes's Laennec, 3d edition, p. 285.

The time of the complete excavation of these cavities, is stated by Louis at not less than three months from the commencement of the disease. The walls then become lined with a false membrane of very slight consistence, replaced after a time by another of a less friable nature, gradually acquiring, as is stated by Louis, a semicartilaginous hardness. Bayle considered that pus was secreted by this false membrane; but Laennec found that excavations so lined were generally empty. Sometimes, as in a fourth part of Louis's cases, no membrane exists at all; and then the naked pulmonary tissue, condensed, red, and infiltrated, formed the walls of the excavation.[‡]

Tuberculous excavations are often traversed by bands, which, from their being more slender in the middle than at the extremities, have been compared to the *columnæ carneæ* of the heart. They consist of condensed pulmonary tissue, and were considered by Bayle and others to be vessels; but Laennec states, that he has never found them enclosing a vessel of any consequence; and Louis has met with only five such instances.[§] This must be understood, however, as applying rather to their not existing as vessels at present, than to their never having had that form; for there seems good ground for believing, that, by an admirable arrangement, of which the animal economy presents to us so many instances, while the bronchial tubes are cut across, (thus allowing free exit for the morbid deposit,) the blood-vessels, where a similar occurrence would produce fatal hæmoptysis, are insulated from the surrounding tisue, and becoming gradually obliterated, form the bands in question.[||]

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[*] Recherches sur la Phthisie, Paris, 1825, p. 12.

[†] Anat. Pathol. (transl.) Vol ii. Dublin, 1831, p. 546.

[‡] Forbes's Laennec, 3d edition, p. 284 to 286. Louis's Recherches Anatomico-Pathologiques sur la Phthisie, Paris, 1825, p. 11 and 12. Bayle's Recherches, &c. Paris, 1810.

[§] Ibidem.

[||] A very interesting observation on this subject, I remember to have heard from Dr William Stokes of Dublin; to whose zealous and enlightened devotion to pathological researches, I am happy to have this opportunity of bearing my unfeigned tes-

The situation commonly chosen by these cavities, is the top of the lung; and, according to Louis and Stark, nearer the posterior than the anterior surface. The former of the two last named authors observes, that he has never met with great excavations in the centre of the inferior lobes. The situation which cavities are thus generally found to occupy, corresponds with that where the tubercles from which they spring, are observed to be first and most abundantly deposited; for all writers agree, that making the first invasion at the summit, every crop as it successively appears, takes a lower and lower position, till the whole lung is gradually pervaded. * Of all the cases detailed by Louis, in his *Recherches sur la Phthisie*, the 33d is the only one, in which the developement of tubercles took place in an opposite manner; namely, from the base toward the summit. Broussais observes, in support of his particular views, that the portions of lungs where tubercles are most abundantly encountered, are precisely those most subject to bronchitis. †

A difference of opinion is to be observed among the best authors, as to the relative frequency of tubercles in the two lungs. Laennec declares for the right; though he allows it not unusual for the left to have the predominance. ‡ But Louis, from the results of 123 cases, considers the left to be more exposed than the right. He found the upper lobe disorganized in thirty-eight instances; and in twenty-eight of these it was the left lung. Seven out of eight cases of perforation of the pleura, were on the left side; as were also five out of seven cases, in which tubercles were confined to one lung. § A similar conclusion was arrived at, by Drs Stark and Carmichael Smyth. ||

But an inquiry of much greater importance, because directly bearing on the question of the curability of phthisis, is whether the tuberculous cavities of which we have spoken, are capable of cicatrization. The affirmative of this question is maintained, both by Laennec and Andral. The former speaks of having frequently observed pulmonary cavities, with all the appearance of tubercular origin, but lined with a semi-cartilaginous membrane. This he considers to be an internal cicatrix, analogous

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timony. The fact I allude to was this, that in the bands which traverse tuberculous excavations, vessels had been found not only pervious, but actually conveying blood to the parts beyond.

* Dr Stark, in Medical Cummunications, Vol. i. 1784, p. 369. Louis's Recherches sur la Phthisie, Paris, 1825, p. 13. Forbes's Laennec, 3d edition, p. 288 and 289.

† Histoire des Phlegmasies, 4me edition, T. ii. p. 213.

‡ Forbes's Laennec, 3d edition, p. 288 and 289.

§ Recherches sur la Phthisie, Paris, 1825, p. 7. 8, and 9.

|| See Dr Stark, in the 1st Vol. of Medical Communications, 1784, and a note by Dr Forbes, in the 288th page of his Translation of Laennec, 3d edition.

to a fistula; and when perfect, to have but a very slightly injurious effect on the health. The patients in whose lungs these appearances were found, lived for years, subject only to slight dyspnœa and chronic catarrh; and died, either of a disease unconnected with phthisis, or of a tubercular developement, subsequent to that which had produced the cicatrices. "I have within these few years," he observes, "had under my care several patients affected with chronic catarrh; and who afforded distinctly the sign of pectoriloquism, although they had in no other respect any symptom of consumption." Had any other than Laennec been the auscultator, a suspicion might have been raised, that bronchophony from the dilatation of a bronchial tube (the result of chronic catarrh) had been mistaken for pectoriloquy. He also mentions a lady, declared by Bayle (fourteen years before,) to be decidedly consumptive, who recovered beyond all expectation; retaining only a slight cough, while pectoriloquy was still "most distinct." All these he considers to have been instances, where tuberculous excavations were completely emptied, and acquired a cartilaginous lining. In further support of these views, he gives five cases, where dissection proved the state of the parts to be that just described. In the last of these, was observed an imperfect adhesion of the membrane lining the sides of the cavity;—an appearance which led him to think, that the excavations might sometimes be wholly obliterated, without the intervention of a cartilaginous lining, by mere adhesion of the pulmonary substance, as in other solutions of continuity. He was confirmed in this opinion by sometimes finding, especially in the upper part of the lungs, bands of condensed cellular tissue, having every appearance of cicatrices. On the surface of the lung corresponding to these presumed cicatrices, he found a depression or retraction, like the puckering of the skin over a scirrhous mamma; and evidently produced, as in that case, by the shrinking of the parts subjacent.*

The testimony of Andral is equally satisfactory. He regards it as a fact fully established, that the cicatrization of tuberculous cavities does actually take place, though unfortunately but in a small proportion of cases. Sometimes the cavity is filled up with a fibro-cartilaginous mass, and sometimes even with phosphate of lime. He notices also the depression or puckering of the external surface of the lung, described by Laennec; adding, that this depression is filled up, either with packets of false membrane, or by an indentation of the thoracic parietes. He quotes several very striking cases of cicatrization, in support of his position.[*] We should be inclined to suspect, however, that they are not so frequent as Laennec imagined; for Louis declares he has never met with these cicatrices; and that superficial depressions are often found, where the tissue beneath is healthy.[†] While on a visit to Dublin, in the course of last year, I was shown by Dr Townsend a portion of lung, containing a condensed cellular band, which he considered a real cicatrix. Dr Townsend's familiar and extensive acquaintance with morbid appearances, entitles his opinions to much confidence.

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* Forbes's Laennec, 3d edition, p. 305 to 315.

Having now traced the progress of tubercles, as commonly met with, from their first appearance to their final evacuation, let us just notice two or three less ordinary forms, in which tubercular matter is sometimes developed.

The first is that of *encysted* tubercles;—a rare variety, since Louis has but once encountered it, as related in his 31st case.[‡] The cyst is formed, according to Laennec, when the tubercles long remain stationary. A false membrane is deposited around them, gradually being converted into a soft cartilaginous cyst, smooth internally, but firmly united to the surrounding lung. The ossification of these cysts is extremely rare; but Laennec saw one osseous cyst, which appeared to have a tubercular origin.[§]

Hitherto we have spoken of tubercles as insulated bodies, gradually increasing in size, and coalescing into masses. But the morbid deposit may assume the latter form at once; and this constitutes what is called *tuberculous infiltration*, of which Laennec particularly describes two varieties. The first is the *grey* tuberculous, which is frequently met with in the neighbourhood of excavations. Sometimes, though very rarely, it exists alone. If cut, it presents a smooth polished section, of grey colour, and cartilaginous consistence; having nothing of the vesicular structure, and quite impermeable to air. Its first approach to softening, is indicated by the appearance of numerous opaque yellow spots in its interior; gradually involving the whole mass.

The other species is the *jelly-like* tuberculous infiltration. It is met with in the intervals of miliary tubercles, has a semifluid consistence, and is either colourless, or with a sanguineous tint. It gradually acquires greater consistency, and is insensibly transformed into the *grey* tuberculous infiltration just described; of which it may be regarded as a variety. Yellow spots make their appearance, and it runs through all the stages of tubercular degeneration.*

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[*] Anat. Pathol. (Transl.) Vol. ii. Dublin, 1831, p. 546, to 549.—Clin. Med. 2me. edit. T. ii. p. 381 to 394.

[†] Recherches sur la Phthisie, Paris, 1825, p. 35 and 36.

[‡] Ibid. p. 10 and 398.

[§] Forbes's Laennec, 3d edition, p. 286.

We have now traced the progress of tubercles in the various forms they assume. It only remains for us to say a word or two on their origin. And here we shall not attempt to go through a fatiguing journey of centuries, to collect the crude and scattered opinions, which have at times prevailed on the subject;—such as their originating in putrid bile or phlegm, as maintained by Hippocrates; or from viscidity and obstruction of the pulmonary exhalent vessels, as held by Dr Reid and others; or from inorganic mucus, as contended by Dr Rush. In the present day the subject has nearly reduced itself to the question, whether tubercles are or are not the product of inflammation. To this question a decided negative is returned by Bayle, Laennec, Louis, &c. The various inflammatory lesions to which they might be assigned, are gone over at some length by Laennec; who endeavours to prove, that with respect to neither of them is a sufficient case made out. With regard to pneumonia, which has been most relied on, he affirms that its symptoms rarely precede those of phthisis; and that even where such a sequence is observed, it is impossible to say whether the tubercles by their irritation, may not have excited the pneumonia; that in persons dying of the latter, the former are rarely found; and that few consumptive patients present symptoms of pneumonia during life, or any trace of it after death; that where the rare complication does exist, in 19 cases out of 20, the tubercles preceded the pneumonia; that we have never been able to perceive the stages of transition from one to the other; and that, although chemical analysis may not have discovered a difference, between softened tubercle and true pus, yet it has equally failed to point out the distinction, between the albumen of an egg and the secretion of certain cancers; a fact which proves the imperfection of chemistry, rather than the identity of the matters in question.†

The grounds on which Louis advocates the same doctrine are, that of 80 phthisical subjects, into whose previous history he had particularly inquired, only seven had ever been affected with pneumonia, and only 23 particularly subject to catarrh; that tubercles are more frequent in the upper lobes, while pneumonia commonly attacks the lower; that the latter rarely attacks both lungs, while the former generally does so; and that while phthisis is most common in women, men are more liable to pneumonia and catarrh. In cases of chronic pleurisy, he found as many tubercles in the lung of the sound, as in that of the diseased side. *

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* Forbes's Laennec, 3d edition, p. 304 and 305.

† Ibid. p. 296 to 298.

Dr Armstrong leans to the same side of the question; observing, that, from the irritation produced by the increasing size and number of tubercles, a *consequent* surrounding inflammation is not unfrequently produced; and that in many cases of tubercular depositions on the *pleura* or *peritoneum* the serous membrane is transparent up to those very points, and only becomes inflamed from the irritation consequent on their enlargement. †

But, on the other hand, the inflammatory origin of tubercles is maintained by several physicians of eminence and celebrity. As the most strenuous of these, the name of Broussais will instantly suggest itself. He considers tubercles to be lymphatic glands, rendered visible by inflammation; and proposes to substitute for *phthisis* the term *chronic pneumonia.* ‡ On this it is remarked by Andral, who appears to take a middle course, that tubercles are probably inflamed lymphatic glands, in a certain number of cases; but that this is far from being their only source, as is proved by their developement in other parts of the system. "It is probable," he observes in another place, "but not demonstrated, that the pulmonary lymphatic ganglions are occasionally the seat of tubercles."§ Tubercles, he concludes, are the product of a morbid secretion, generally, but not necessarily, preceded by active *hyperæmia;* for they may be the result, neither of an *increase* nor a *diminution* of the vital action, but of its *perversion.* In all this, however, he contends for the pre-existence of a tubercular diathesis. If the disposition to tubercles be very strong, the slightest local congestion, he conceives, will give rise to them. If less strong, positive inflammation is necessary. But if such a predisposition be wholly absent, inflammation, the most intense and long-continued, will fail of effect.

The subject has been ably investigated by Dr Alison, whose remarks will be found at large in the first and third volumes of the Edinburgh Med.-Chir. Transactions. I shall only trust myself with the conclusion arrived at. Dr Alison "has little doubt that tubercles do often form, without being preceded by inflammation, of such a character as to be detected by symptoms during life; and that, in the lungs at least, the inflammation, of which the undeniable marks are so often found along with them after death, has really often been posterior to them in date. But he has also been led to believe, that it is not merely (as Laennec states) a possibility, but a real and frequent occurrence, that inflammation, acute or chronic, (to which he would add febrile action) however produced, becomes in certain constitutions the occasion of the developement of tubercles."

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* Recherches sur la Phthisie, Paris, 1825, p. 503 to 526

† Morbid Anatomy of the Bowels, London, 1828, p. 16 and 17.

‡ Histoire des Phlegmasies, 4me edition, T. ii. p. 25 and 385, et T. i. p. 72.

§ Clin. Med. 2me edit. T. ii. p. 18, 24, 25, 26, and 28.

When doctors so distinguished disagree, it is not for me to decide; but in this, as in other cases, it will be probably found, that truth is to be arrived at by avoiding extremes. We should probably err, and in our present state of knowledge, we should certainly not be justified, in attributing them exclusively either to one cause or to another. The whole course of our investigations, indeed, must suffice to convince us, on how limited a number of points a decided opinion is admissible. To what side soever we turn, we meet with doubts unresolved, difficulties unsurmounted, intricacies unexplored. Points we had considered to be clearly established, will often fail to stand the test of closer examination; and ground we had esteemed the most solid and secure, will sometimes tremble beneath a determined step.

ART. VII.—*Account of an Epidemic Attack of Indian Cholera of Spontaneous Origin.* By JAMES GIBSON, M. D. Edinburgh, late Assistant-Surgeon to the 13th Light Dragoons.

EVERYTHING connected with the early history of cholera in our own times is worthy of being put on record; and examples of its spontaneous origin and termination cannot fail to be interesting to all those who are desirous to become acquainted with the circumstances under which this singular disease arises and spreads. An example of this mode of origin, which fell under my observation in the year 1818, in the 69th Regiment, on its march from Bengalore, in the Mysore country, to Cannanore, on the Malabar coast, presented at the time several interesting points of medical reasoning; and as this has been mentioned by Mr Scott, the able and laborious compiler of the Madras Report, only in the most general and casual manner, I think a particular detail of the essential circumstances, through the medium of your Journal, may, at the present moment, not be uninteresting to the medical reader. It is proper at the same time to mention, that, as I then held a medical commission in the regiment, and had the care of a body of men amounting to between 3000 and 4000, these circumstances made at the time so deep an impression on me regarding the course of the disease during our march, that I took pretty accurate notes of them; and I am satisfied that I do not exaggerate when I say, that I observed with the most scrupulous attention every circumstance regarding the mode in which the disease appeared and spread among a body of men not under 1000 or 1200.

From an old regimental Medical Journal still in my possession, I shall transcribe a few cases which may serve to show the identity of the disease now prevailing in so many places in our own country, with the Indian epidemic, as well as the difference of character it has assumed in its journey over the world.

Bengalore *(Bengaluru)* is a large fortified town in the Mysore Raja's territories, 70 miles N. E. from Seringapatam, in N. lat. 12° 57′, E. long. 77° 38′, situate on a table land elevated to between 2800 and 3000 feet above the level of the sea, the east side of which is drained by the river Punaur, while its west boundary is washed by the tributaries of the Cavery. The country on the west, through which the route of the troops lay, consists of a series of hilly elevations, on which are placed Severndroog, Paughur, Maggeri, and other elevated forts; but after this it descends rather suddenly to a long valley, which is traversed by the main stream of the Cavery, on which stands the city of Seringapatam. It continues low to a considerable distance to the west of this, until it gradually begins to ascend as it approaches the chain of the western Ghauts. The range of the thermometer in this tract is between 82° and 56°.

The Mysore is in general indeed rather a hilly district, and, with some few exceptions, as at Bengalore, Seringapatam, and Severn Droog, is comparatively salubrious. In consequence of its position between the two mountainous chains of the eastern and western Ghauts, which coalesce at its southern extremity, the force of the monsoons and their attendant rains is remarkably impaired; and the showers, which, though frequent, and occasionally heavy, are rarely long continued or violent, serve only to cool the air and refresh the surface of the earth. It hence happens that the climate in this elevated region is temperate and healthy to an unusual degree. The south-west monsoon, however, which commences about the beginning of June, and continues till the beginning or middle of September, extends its influence to this district.

The distance between Bengalore and Cannanore in a direct line, is about 160 miles, but by the circuitous tract of the marching roads may amount to 180 or 190 miles; and the route lies first through the table land of the Mysore, and then on the western Ghauts.

The 69th Regiment had been two years stationed in Bengalore, in the centre of the Mysore country, selected chiefly on account of its salubrity of climate as the principal military station under the Presidency of Madras. There is barrack accommodation for 7000 troops, European and native. The disease had been prevailing in the northern districts, but had not extended itself to that division of which the cantonment of Bengalore is the centre.

On the 12th October 1818, the regiment commenced its march from Bengalore on the route to Cannanore, and were accompanied by a wing of a native corps, going to relieve a similar detachment in our route, together there might be a thousand muskets, and, according to the usual allowance of camp and bazaar followers, the whole would amount to from 8000 to 10,000. I do not think it necessary to explain the component parts of this mass. To those familiar with the subject no explanation is necessary; and there are abundant sources of information for the benefit of those who are not.

For four days we proceeded without any remarkable occurrence, through the several stations of the western district of Bengalore, at the rate of about 12 miles daily; and on the 17th, the morning of the fifth day, we arrived on the left bank of the Madoor river, a tributary of the Cavery, about 7 miles from Seringapatam, and 55 miles from Bengalore. It had rained hard the two previous days, and the river was a swollen rapid stream, which the advanced guard at some risk had forded, in the hope that it would fall as speedily as it had risen. A line of encampment was taken up along the bank, on ground saturated with several days constant rain. The river did not subside, but, on the contrary, seemed daily and hourly to increase; and it therefore became necessary to set about constructing and procuring basket-boats to cross it. When we had been three days encamped in this swamp, subjected to great fatigue and many privations, cholera broke out among the native troops and followers; and although great exertions were made to get across, six days more were spent before it could be effected; and in that time the disease had extended itself along the whole line, and had already thinned the followers considerably.

I had been left on duty with the rear division, and did not know distinctly how matters were going on with my friend Mr Mackechnie, the surgeon, who had crossed the river with the whole of the hospital establishment before the disease broke out, and was occupied two miles off on the other side of the ford. I found him in much distress at the loss of three men by cholera, with four under treatment, one of whom died that night. I took the opportunity of inspecting the body the following morning, and having still the notes of the dissection by me I shall here transcribe them. We had expected some information to guide us in our practice from this dissection. Whether we did or not, on mature reflection, I am not prepared to say; for the mode of treatment remains as empirical now as it was then; and notwithstanding the superior skill, anatomical knowledge, and deep research, of those who have been since engaged in looking for the proximate cause of the disease, by the dissection of those who die of it, we are still in the dark, and are likely to remain so,—for cholera being a functional and not an organic disease, will never be elucidated by dissection.

" Private Richard Kelsal had been on fatigue duty for three days, was seized with cholera, and died after four hours illness.

" *Notes of the dissection.*—A considerable degree of vascularity of the mucous coat of the stomach, which had also extended to the peritoneal lining ; the same observed in the *duodenum ;* the intestinal canal in its whole length empty ; the right side of the heart and large vessels generally, and especially the mesenteric arteries and vein, gorged with black inspissated blood ; the urinary bladder contracted and shrivelled like a pressed fig."

This dissection did not throw much light on the subject ; but from the inflamed state of the stomach, coupled with the fact, that the most distressing symptom was intense pain at the *scrobiculus cordis,* we determined to bleed with more freedom, but not to neglect the prescribed practice of the Madras medical board, which, it is almost unnecessary at this time to say, consisted of calomel, laudanum, and stimulants.

By this time we had crossed the river, and after this period not a case of the disease occurred among the native troops. This immunity they in their idolatrous ignorance attributed to the sacrificial offerings they had made to their offended gods ; but it was more rationally explained by the paternal care of their officers, who took every precaution to prevent more intercourse between their men and those of the regiment, than the strict performance of duty required. All the European and native children who took the disease on the banks of the river died, without one single exception.

The fourth day's march after we left the banks of the Madoor, brought us to the city of Mysore, which is the seat of the British residency, and court of the native prince or regent of the kingdom.

We arrived on the 27th at Mysore, the ancient capital of the province, situate in the same valley as Seringapatam, and about nine miles distant from that city, but in a more elevated and healthy situation.

We were detained four days in Mysore, where our public cattle, namely, elephants, camels, and bullocks were changed, with all their followers ; for every beast of burden in India has a certain number of followers. No attempt was made to prevent the freest intercourse between the camp and the city, for two plain reasons ; first, because it would have been impossible ; and secondly, nobody then considered the disease contagious ; and those who had been in the thick of it treated the fears of others lightly, from the same principle which prevents a man in the heat of battle from being a coward. It is proper to observe, however, that the disease held its ground in the camp, carrying off several victims daily. Four days after we left Mysore it broke out with great malignity in the city, commencing as usual with a few cases in different situations, but at length became general, except within the sacred precincts of the palace in the inner fort, where the rajah with his court and family shut themselves up. In a letter which I have received from the Honourable Mr Arthur Cole, dated 26th March 1832, then British resident in Mysore, and which I shall give in his own words; the following statements are communicated. " The population of Mysore was 100,000, and shortly after the 69th left us, we lost at the rate of 500 people daily, for three weeks, after which the disease gradually declined for that year, but it has returned every year since in the beginning of the hot season. Poor Jones, our residency surgeon, you know, fell a victim on its first appearance." Thus in a population of 100,000, 10,500 people died of cholera in three weeks; a great many more died before the disease had ceased; for it declined gradually, and Mr Cole does not mention the amount of mortality after the first three weeks. I leave it for the contending parties to decide, whether in this instance the disease was brought to the city of Mysore by the 69th regiment, and spread by contagion or not.

The second day's march brought us to the Wynaad, an intricate jungle through which a military road has been cut. This spot is the very focus of malaria,—few escaping an attack of remittent fever who pass through it; and to the only village in it, Tanamboul Cotta, or Wynaad, in the course of our route, we communicated the additional pestilence of cholera. * We at length came to the extremity of Wynaad, and descended the great hill pass at Periapatam, on which occasion it was necessary to put the whole regiment on fatigue duty for two days to get down the baggage. At the top of this mountain-pass, the last case of cholera occurred in a drummer, which I remember from the circumstance of being obliged, when I was half way down, to retrace my steps to the top of it to see him. This man recovered under bloodletting and large doses of calomel and opium. The climate at the top and bottom of this mountain-pass differs very much in temperature. At the top the thermometer stood in my tent at mid-day at 70, at night it fell to 54, rendering blankets absolutely necessary for comfort; at the bottom it was 116, and at night 80 and sultry, without a breath of air. Four days pleasant marching without a single case of cholera brought us to within 12 miles of our journey's end, where we were detained in a quarantine of observation for three days, and then permitted to enter the cantonment.

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* N. L. 11°. 47, E. L. 76°. 10.

It is unnecessary to dilate further on these facts at this distance of time; but it may be proper to say, that the disease did not break out in Cannanore for a year after the events here stated, and then it came down coastways from Bombay.

Examples of the spontaneous origin of the disease among troops on the march in India have since been frequent; and though great ingenuity has been shown to prove that they have been coincident with, or dependent on certain meteorological phenomena, atmospherical pecularities, or sudden changes in the weather, our experience is every day convincing us that we are in ignorance as to the occult causes, whether remote or proximate, of that train of functional disorder which we designate cholera; for the disease has arisen, been sustained and spread, despite of all sensible changes and states of the atmosphere.

CASES.

Camp, Kamnottah, 16th Nov. 1818.—Sergeant William Maxwell, ætatis 31.—In India 13 years. Brought to my tent at 12 o'clock at night with all the bad symptoms of the prevailing epidemic. Had been ill for two hours; his pulse could scarcely be felt; surface cold; hands and feet livid; countenance collapsed and cadaverous; attempted to get blood in vain; gave him a scruple of calomel and 90 drops of laudanum, and directed a medical pupil to give him a glass of arrack punch every half-hour, and to repeat the opiate if the vomiting continued. The regiment marched at four in the morning. I saw him put into a dooly and sent forward. The second draught had been retained, and he appeared better. On arriving at the new ground he was much worse, and died at eleven o'clock that day.—The appearances on dissection the same as those detailed in private Kelsal's case.

Sergeant Colquhoun, ætatis 36, a strong healthy man, in India four years, brought to the hospital tent at 8 o'clock in the morning of the 24th November 1818. I found him vomiting that peculiar coloured fluid which characterizes this disease, and learned from his wife that he had been repeatedly purged early in the morning; severe spasms of the legs; countenance not sunk, but expressive of the greatest anxiety and apprehension; begged to be allowed cold water to cool the burning pain in his stomach, and to be bled. Gave him a scruple of calomel and a draught containing 90 drops of laudanum and took ℔. ij. of blood from his arm by a very large orifice. As the blood flowed the spasms subsided, the medicine was retained, and he fell into a sound sleep, from which he awoke at 3 o'clock very much relieved, but still complained of pain at the pit of his stomach and slight spasms of the muscles of the toes and fingers. Draught repeated, with 60 drops of laudanum and a blister applied to the seat of pain.—On the following morning he had no symptom of cholera, and recovered rapidly.

The movements of the disease in the Indian peninsula after this period, it comes not within the scope of this notice to consider in detail. Five years after, in the year 1823, when the regiment was quartered in Madras on the eastern coast, cholera once more broke out among us in the month of May, and continued to prevail till late in autumn. I shall not attempt to describe its characters; but merely subjoin a few cases from my regimental register as they occurred.

Thomas Gudge, æt. 32; in India 6 years.—April 16, 1823. Brought to hospital last night with all the symptoms of spasmodic cholera, with which he was seized suddenly about 8 o'clock. I extracted about 64 ounces of blood by a very large orifice, and the spasms and irritability of stomach progressively ceased. Large doses of *Tinct. Opii*, and drachm doses of calomel were repeatedly given, and at length retained, when he fell into a sound sleep. Complains now of pain across his chest and right side; pulse 74; skin moist and temperate; no stool since last night.—*Sumat P. Jalap. comp.* ʒi. *stat.*

17th. Pain across the epigastric region continues; medicine operated; pulse and skin natural.—*Appl. empl. lyttæ qua dolet.*

18th. Continues to improve; blister vesicated well. Has been frequently purged during the night, but his stools indicate a return to healthy secretion in the liver.

20th. Healthy secretion from the liver obvious, and rather in excess.—*Sumat P. Jalap. comp.* ʒi.

23d. Convalescent.

24th. Discharged cured.

Pat. Woods, æt. 29; in India 13 years.—April 25, 1823. Admitted yesterday with the usual symptoms of *cholera spasmodica* in rather an aggravated form; but, as I succeeded in bleeding him freely, all the symptoms have yielded to the powerful use of the lancet, laudanum, and calomel. He still complains of headach, and a sense of fulness and slight pain at the epigastric region. Pulse full.—*Sumt. P. Jalap. comp.* ʒi.*stat. Mitt. sanguis e brachio ad* ℔. iss.—1 o'clock. Symptoms of cholera returned about half an hour ago, particularly the spasmodic affection of all the muscles of his body. He was bled to about ℔. ij. which gave temporary relief, and brought on syncope. He is now very much exhausted and very restless, but his pulse is to be felt, though very weak.—The anodyne draught of cabgar given and retained. Hot punch to the amount of two ounces every time he awakens.

26th. All the symptoms were again subdued, and he now chiefly complains of headach and debility.—*Sumt. P. Jalap. comp.* ʒi. *stat.*

27th. Medicine did not operate.—*Sumt. Sulph. Sodæ* ℥iss. *stat.*

29th. Bowels again bound.—*Rept. Sulph. Soda.* ℥i.

10th May. Discharged Cured.—Full diet.

John Hallam, æt. 44; in India 18 years.—April 1823. Admitted with violent symptoms of epidemic cholera about 12 o'clock last night. His pulse being scarcely perceptible, and vomiting and purging incessant, violent symptoms came on shortly afterwards, and a cold clammy sweat bedewed his skin, which shrunk up and became shrivelled. Scruple doses of calomel and the usual strong antispasmodic draughts, were repeated until retained, but the stomach seemed to have lost all sensibility. At 6 this morning his pulse could not be felt; countenance was hollow and sunk; he appears to be expiring.—Warm stimulating draughts of punch constantly to be repeated; friction continued. N. B. Every effort to bleed him failed, as only about half a pound could be extracted.

12th. Died about 11 o'clock yesterday.

Samuel Dixon, æt. 28; in India 6 years.—April 22, 1823. Brought into hospital about half-past 7 o'clock this morning, having been seized with watery purging and violent pain in his abdomen about two o'clock. His features had assumed a livid hue, and his countenance had sunk before admission. His pulse could scarcely be felt at the wrist, and his extremities were cold. His stomach rejected every thing, and his stools were perfectly transparent and gelatinous. I succeeded in taking about half a pint of blood from his arm, when the action of the artery could not be found. Strong stimulating cordial draughts were given, and repeated every quarter of an hour. Scruple doses of calomel, in common with many other things, were thrown off his stomach.—Warm stimulating frictions to his extremities; punch to the amount of four ounces every quarter of an hour. Died about 12 o'clock.

Joseph Storey, æt. 52; in India 18 years.—April 23, 1823. Admitted last night with violent pains across the abdomen, vomiting and great prostration of strength. His pulse was favourable, and I bled him freely, which afforded the greatest relief. His stomach rejected several of the draughts given; at length, however, the irritation was relieved, and the medicine retained. He had several hours sleep, and his skin is now covered with a moist agreeable perspiration.—The whole abdomen was blistered, and previously to be besmeared with concentrated nitric acid. ℞ *P. Jalap.* ℈i. *Calomelanos, gr.* viii. *Confect. q. s. M. fiat bol. stat. sumend.*

24th. Medicine operated well. Has no symptoms of cholera; but there has been considerable reaction of the whole system,—in particular, since the healthy secretion from the liver commenced. Pulse accelerated; skin moist; complains of acidity of stomach.—*Sumt. Carb. Magnes.* ʒij. *stat.*

26th. Doing well.—*Rept. Magnes. Carb.* ʒij. *stat.*

27th. Convalescent.

29th. *Sumt. Sulph. Magnes.* ℥i.

30th. Discharged cured.

James Brown, æt. 36; in India 7 years.—April 30, 1823. Brought to hospital at 2 o'clock this morning, having all the unfavourable symptoms of cholera, viz. incessant vomiting and purging, violent spasms of the muscles of his legs, particularly the *gastrocnemii*; collapsed and sunk countenance; eyes sinking; mouth and eyelids livid, and a weak compressible pulse. His constant cry was for water, and he could be with the utmost difficulty kept in his bed. He had been seized with watery purging and tenesmus about 6 o'clock, and being rather irregular in his habits, Mr B. prescribed a dose of Epsom salts for him about 11 o'clock, between which time and 2 o'clock the disease had evinced itself. Every means recommended for these distressing symptoms were adopted in vain, and he died at 12 o'clock to-day, having been in hospital 10 hours, and ill altogether 18.

Sergeant Arthur Hall, æt. 38; in India 6 years.—April 30, 1823. Brought to Hospital early this morning, having had vomiting and purging the greater part of the night. Complains now of great prostration of strength, and his countenance has rather an unfavourable expression, appearing alarmed; pulse 84, and cold; no pain of abdomen, but giddiness, and no spasms of any other muscle. Is a robust strong man, and I have rather a favourable opinion of his case. (Two hours afterwards,) retained the second draught, but not inclined to sleep; is perfectly easy; pulse distinct, small, and compressible.—*Calomelanos* ℈i. with Corbyn's draughts on admission. Drink to consist of hot stimulating punch, and a draught to be repeated until retained. *Rept. Opii. gr.* ii. punch continued, and an anodyne injection given.

May 1st. The draught with small doses of stimulating punch were frequently repeated. Anodyne enemas, and the scruple doses of calomel, at length produced some confused sleep, and had the narcotic effect of inebriating him. He is to-day much better, but complains of giddiness and great debility. Prognosis favourable. —*Sumt. Calomelanos* ℈i. *stat.* Arrow-root diet.

2d. Continues progressively to amend.—*Sumt. Ol. Ricini* ℥i. *stat.*

4th. Still improving.

7th. Discharged cured.

In the following case the symptoms of cholera terminated in severe and fatal dysentery.

James Kelly, æt. 25; in India 3 years.—May 7, 1823. Admitted, complaining of the usual symptoms of cholera morbus, which has now ceased, and he complains of irregularity and looseness of his bowels. Pulse 96, and very full. Is griped on every occasion to go stool.—*Mitt. Sanguis. E. B. ad* ℔. ij. *Habt. enema comp. vespere* 5 P. M. *Calomelanos* ℈i. *stat.*

8th. The large dose of calomel brought on great irritability of stomach, and vomiting. His stools, according to his own account, are white, and he complains much of griping; pulse and skin natural.—*Sumt. P. Jalap. comp.* ℈ij. *Pil. Opii gr.* ij. *h. s.* ℞. *Calomelanos* ℈i. *P. Antim.* ℈ij. *Opii gr.* iij. *M. ft. pil. xij.* one every half hour. *Enema com. subinde.*

9th. In consequence of the accelerated pulse and acute pain, he complained at the evening visit across the abdomen. He was directed to be bled to ℔. ij. He is now very weak and still purged. —*Cont. Pilulæ Calomelanos c. P. Antim. ut supra, et enema subinde.*

10th. Purging continues; stools black and offensive. Complains of being severely griped. Mouth not yet affected.—*Omittr. Pilulæ. Sumt. Calomelanos* ℈i. *stat. Cont. Enema c. Opii gr.* iij.

11th. Purging of dark-coloured offensive stools still continues; no pains of abdomen, but he complains of very great debility. His pulse, however, continues very favourable, and his countenance the same. Mouth not yet affected.—*Rept. Calomelas ad* ℈i. *c. opio gr.* ij. *Cont. enema domest. omni tertia hora.*

12th. Had rather a better night's rest after another simple dose of calomel; his mouth is not yet affected, and all the symptoms of dysentery continue, but his pulse is still favourable; passed several lumbrici.—*Rept. Calomelas ad* ℈i. *stat et vespere. Contin. enema subinde.*

13th. Had a very restless night, and is still very uneasy; purging of red-coloured watery stools came on in the night, with much pain at stool and tenesmus. The scruple dose of mercury seems to have no effect on his system, but aggravates the purging and general uneasiness; pulse 86, and very full, although there are no symptoms of gangrene yet. I apprehend a fatal termination in this case.—℞ *Mass. Pil. Hydr. gr.* xv. *P. Ipecac. gr.* iv. *Opii. gr.* iij. *M. fiant Pilulæ* iij. One pill as above to be taken every hour. *Cont. enema c. opio subinde.*

14th. He has passed an easy pleasant night, and had some very favourable stools. Mouth not yet affected; pulse and skin favourable.—*Cont. Pilulæ ut antea et enema subinde.*

15th. Continues to amend slowly; mouth tender, but saliva does not flow.—*Cont. Pilulæ et Enema.*

16th. All the symptoms of dysentery have ceased, and his stools have suddenly become yellow and natural, although his system is not at all affected; but he has been kept in proper perspiration for many days.—*Omitt. Pil. Cont. Enema.*

17th. Stools not so favourable; in other respects the same.—*Habt. Ol. Ricini* ℥i. *Cont. Enema.*

18th. Oil operated well, and he is very considerably better; pulse and skin natural.—*Omitt. enema.* Arrow-root diet.

19th. Purging now incessant, and consists entirely of blood and mucus; his pulse keeps of good strength, and his skin is covered with an equal moisture; mouth not all affected. I almost dreaded the action of large doses of calomel, but in this case ptyalism must be accomplished if possible, else the patient will sink.—*Habt. P. Submur. Hydr.* ℈i. *meridie et vespere. Habt. enema. comp. 3tia hora.*

20th. No fatal symptom has yet come on; but, I am sorry to say, nothing like ptyalism can be induced.—*Rept. P. Submur. Hydr.* ℈i. *stat. meridie et vespere. Enema com. 3tia hora. Vini rubr.* ℥iv.

21st. No change. Continue medicine.

22d. Incessant purging during the night of blood and mucus. His pulse is still favourable, and he has no immediate symptoms of gangrene, but its approach is to be apprehended.—*Omitt. Submur. Hydr. in scrupulos dotes.* ℞ *P. Submur. Hydr. Antim. aa.* ℈i. *Opii. gr.* iij. *Oryzæ q. s. M. fiant pil.* x. *one every half hour. Vin. et enema.*

23d. No preparation of mercury seems to have the least effect on his system. His evacuations are black, slimy, and offensive; he is very weak, but no symptoms of gangrene have yet recurred.—℞ *Ol. Ricini* i. oz. *Ess. Menth. Pip. gr.* xxx. *Aq. calid.* ij. oz. *M. Cont. Pilulæ.*

24th. It appears to me after a fair and continued trial of every mercurial preparation, that his symptoms, if not aggravated, are at least kept up by it; and, as his system is proof against its effects, it is in vain to hope for ptyalism. He remains in the same state, but his stools seem to contain more feculent matter.—Continue enema four times a-day. To have 4 oz. of wine and arrow-root diet.

25th. He appears very considerably better; pulse 76, and of good strength; his countenance is also very favourable; purging continues.—Injections, wine, and arrow-root continued.

26th. Appears still to improve.—Means continued.

27th. He has since last report become much weaker; and, although his pulse is still favourable, I apprehend the accession of gangrene to-day, in consequence of the long-continued diseased state of the viscera, and the non-effect of mercury on his constitution.—*Habt. Ol. Ricini* i. oz. *stat. Cont. enema,* wine, and arrow-root.

28th. Debility increasing; purging now very frequent and offensive; countenance sunk; pulse 100, and very full. I apprehend the approach of symptoms of gangrene hourly.—Wine, arrow-root, and the injections continued.

29th. All the unfavourable symptoms are rapidly increasing.

30th. Appears to be sinking fast. Wine continued.

Died on the 31st.

Bartholomew Hewson, æt. 26, in India 6 years.—May 6, 1823. Brought to Hospital last night between 5 and 6 o'clock, with all the symptoms of spasmodic cholera, which, according to his own account, he has had since two o'clock the preceding night; obstinacy prevented him from reporting sick, but got access to liquor. Pulse 94; spasms of the muscles of his legs very painful; skin cold, and covered with a clammy sweat, and shrivelled.—*Habt. P. Submur. Hydr.* ℈i. *c. haust. Tinct. Opii. gr.* c. *Ol. Menth. gr.* xx. To be repeated until retained. Punch, 6 oz. every two minutes. To use hard rubbing with camphor and arrack. Prognosis fatal.

7th. The whole of yesterday he continued in a very restless state, with his extremities cold, and his pulse could scarcely be felt; the spasms were also painful, but subdued by friction. His arrack punch was procured in as large doses as the stomach would retain. Towards evening his countenance improved, and, as twelve hours had elapsed since he took any opiates, I repeated it, and persevered in the other means. This morning his pulse and general aspect have much improved; he had a good night's rest; and passed a bilious offensive stool. Is confused from the quantity of spirits, and the effect of the opiates.—*Sumt. Ol. Ricini* ℥iss. *stat.* To have some congee-water at pleasure.

8th. The liver has resumed the secretion of bile in redundant quantity; he complains of nausea and inclination to vomit; and has passed deluges of bile both upwards and downwards; pulse

90; skin rather hot and dry.—℞. *P. Ipecac. gr.* xv. *Tart. Ant. gr.* ij. *Aq. tepid.* iv. oz. *M.* To be taken in divided doses.

9th. The redundant secretion of bile carried off both ways by the emetic yesterday. His principal complaint now is great debility; his skin and pulse being natural.—*Habt. Sulph. Magnes.* ℥vi.

10th. Medicine operated; his stools are quite black; complains of much debility; pulse and skin natural.—*Rept. Mist. purgans* iv. oz.

11th. Stools are still black and acrid; pulse and skin favourable. —*Rept. Mist. purgans* iv. oz.

12th. Several copious black offensive stools were elicited by the medicine yesterday; his pulse is still full; and he complains of general uneasiness of his abdomen.—*Rept. Mist. purgans* iv. oz.

13th. Much better to-day.

14th. Complains of debility and purging from the effect of medicine; pulse 72, soft, and natural.—*Habt. Pulv. Opii gr.* ij. *stat.*

15th. *Rept. Pil. Opii. gr.* ij. *statim et vespere.*

17th. Complains now of pain in the abdomen and tenesmus, with frequent calls to stool; pulse natural; skin moist and temperate.—*Habt. enema com. mane et vespere.*

18th. Derangement of the bowels continues, and his stools indicate the superabundant secretion of bile; but he has no symptomatic fever.—*Habt. Mist. purgans,* iv. oz. *Omittr. enema.*

19th. He is much better this morning.—*Habt. Haust. Anodyn. h. s.*

20th. Bowels very open, but his stools are natural.—*Rept. Haust. Anodyn. h. s.*

21st. Tongue foul, and he is purged; no febrile symptom.—*Ol. Ricini* i. oz.

23d. Improves slowly.—Fowl diet.

26th. Bowels bound.—*Mist. purgans* vi. oz.

28th. Convalescent ward.

June 10th. Discharged cured.

I shall not involve myself in the contested speculations respecting the contagious qualities of the disease; believing, as I do, that there is nothing incompatible with former observation in supposing, that a disease not observing the usual laws of contagion in the East Indies, may so far change its character as to acquire contagious properties in its journey thence to Britain. This it is necessary to explain, in consequence of a change, to a certain extent, in my opinions on the subject; for, like most men who had seen the disease only in India, and had made up their mind merely from their own experience, I did not believe it to be contagious before I went to Sunderland; but there, and at Newcastle, where I had a large field of observation, facts proving the contrary multiplied themselves so rapidly and vividly on my conviction, that they became at last irresistible. I therefore now arrived at the conclusion, that, under circumstances favourable for the propagation of contagion, the same disease which in India preserved the character of a pure epidemic, may spread according to the common laws of contagion in great Britain. The question, at any rate, resolves itself into a mere balancing of evidence; and the person who undertakes the labour of setting the point at rest, will find himself involved in an inquiry requiring great discrimination, judgment, and impartiality; and after all, his labour would be lost; for the common sense of the public will never be led away by the decision of any one man, on a matter of which all think themselves more or less competent to judge.

ART. VIII.—*Some Observations on a species of Entozoon or parasitical Animal found in the Bronchial Tubes and Pulmonary Vesicles of the Common Porpoise.* By DAVID CRAIGIE, M. D. Fellow of the Royal College of Physicians, Edinburgh, Anatomical Inspector for the City and County of Edinburgh, Physician to the Castle-Hill Cholera Hospital, &c.

IN dissecting this season a specimen of the common porpoise, *(Delphinus phocœna,)* found in the Firth of Forth, I met with several morbid changes, which appeared to me interesting in a pathological view.

Though the pleura was sound, the substance of the lungs was occupied by numerous firm bodies, irregular in shape, varying in size from that of a large pin-head to that of a small nut, and which any one accustomed to inspect the human lungs would at once have pronounced to be tuberculous masses or tubercles. On making incisions into these knotty masses, I found that they presented portions of white or blue transparent cylindrical bodies, very firm, and in general coiled up in balls contained in appropriate cavities. One of these I laid hold of by the forceps and drew out to the length of 3 or 4 inches, when its nature became manifest. It was a species of long cylindrical worm, partly coiled up at the one end, and partly stretched into a bronchial tube communicating with the windpipe. The latter tube was now laid open by an incision, and a bundle of 38 or 40 of these animals was seen lying in parallel juxtaposition along the tube and extending into the smaller bronchial canals.

It may be proper to mention, that the principal *bronchus* of the porpoise extends in a longitudinal direction backwards or sacrad, not far from the inner or mesial margin of the lung, and after sending off one large tube at the tracheal or atlantal region of the lung, through the substance and towards the lateral surface of the organ, continues to send off at intervals of $\frac{5}{6}$ of an inch a series of tubes on each side, the inner of which run sacrad to the posterior region of the organ, while the outer are distributed to the anterior and external region. The number of the inner row of tubes was 8 in the specimen inspected by me; that of the outer was 10, each of them being larger at the anterior, tracheal, or atlantal end of the tube, and gradually diminishing in size towards its sacral or ulterior extremity. The majority of the parasitical animals penetrated into the superior and middle tubes of the outer row; a few extended into the upper tubes of the inner and the lower of the outer row; but some were seen in the lower tubes of the inner row; and several of these which I laid open to their extremities presented no foreign body. The tubes of the outer row, on the contrary, were full of the *entozoa;* and two of them were so crammed that no air almost could have entered.

Several incisions made in different parts of the lung afforded the fullest and clearest demonstration of the same point; viz. that the knotty or tubercular masses of the lung were formed by *entozoa* lodged in the extremities of the bronchial tubes. Thus, after dividing some of the hard masses at the anterior surface, and tracing the bronchial worms into them, I removed the pleura and subserous tissue very cautiously from two tubercular portions, and then cut them open with care, when I found a cavity about the size of a grain of wheat or barley, and in which was coiled up the one end of an *entozoon*, while the other extended into a tube communicating with the *bronchus.*

In short, the masses of the lungs of the porpoise, which I at first regarded as tubercular, were occasioned by worms coiled up in the extremities of the bronchial tubes.

I may mention that, besides the large worms thus coiled up and occupying the whole of a bronchial tube, there were many minute ones, not thicker than a horse hair, and not above two inches in length.

The liver I found in like manner occupied in various points by tubercles; and as I was led from what I had now seen of the lungs to inquire whether these were formed in the same mode, I divided several of them and examined them, with the same care. One of these tubercular masses I found to be caused not exactly by cylindrical worms, but by another *entozoon* of a different *genus;* and two or three of them were generally imbedded in the same cavity. These worms were flat or compressed, and of an oblong oval shape, with transverse articulations something in the manner of the diagram sketched in Fig. 6. In the tubercular mass now specified I found two of this kind coiled up together, and contained in a cavity of the hepatic substance, the walls of which were indurated, while the interior contained a partly semifluid substance. Several other indurated spots I divided in the same manner, with the expectation of finding them also occupied by similar parasitical animals. In none else, however, could I detect any appearance of an animal or even an *ovum*, or *ova*; and I found them to consist chiefly of indurated portions of the hepatic substance, containing generally a reddish semifluid pulpy matter, which perhaps may be regarded as the indication of the stage of softening in these bodies.

My attention was next directed to the mesenteric glands, which were enlarged, hardened, and irregularly knotted. These were carefully laid open by incisions, in the hope of finding animals of the same description imbedded in their substance. In no instance, however, was this observed; and all the enlarged mesenteric glands were occasioned by vascular enlargement and injection, with deposition of albuminous or granular matter in the cells.

I now proceeded to examine the parasitical animals of the bronchial tubes with more care and minuteness. I found them to consist invariably of cylindrical bodies varying from 3 to 6 inches in length, translucent or even semitransparent, and rather thicker in the middle than at either extremity. The average diameter of those specimens which appeared to be full-grown, I find, when accurately measured, to be about the twenty-fourth part of an inch; and with the view of showing this, I have caused the three specimens delineated in the plate to be represented of the natural size, (Fig. 3.) When removed unbroken from the bronchial tubes, which could be effected only by carefully laying open a tuberculated mass, and extracting first the coiled extremity and then the whole body of the animal, they measured generally at least 6 inches without uncoiling; and, if allowance be made for this position, many of them perhaps amounted to 8 inches in length. The extremity which I regard as the head was lodged in the *trachea* or *bronchus*, and presented a taper pointed end, terminating in two very minute papillated points, the most remote of which was distinctly incurvated, so as to give the appearance of an unciform proboscis or mouth; while the nearer, projecting like a minute nipple, formed with the first a crescentic curvature. Of this disposition of the head I have given a magnified representation in Fig. 5. The opposite or caudal extremity, which was always coiled up into an irregular knotty bundle, terminated in a convex rounded point, in which, by the aid of a magnifier, a minute aperture could be recognized.

Though the body of the animal is translucent and of a greyish white colour, when examined by reflected light, it presents a dark-coloured longitudinal line, which is produced by a cylindrical canal traversing the whole length of the body from the one extremity to the other. This canal I laid open by longitudinal divisions of the animal for the space of about an inch or sometimes two inches; but always, when beyond this distance, from the minuteness and fragility of the object, the body gave way. In one specimen, however, I succeeded in introducing a hog's bristle through the cylindrical course for the space of five inches, beyond which I found it difficult to urge it further from the chance of breaking the specimen entirely, as the extremity of the bristle was then at the most taper end of the animal and within half an inch of its tail. The inner surface of this canal, which must either be the alimentary, or an abdominal cavity containing an intestine, was villous, and it contained a long thread-like body, dark coloured, but which so easily gave way that it could not be drawn out.

I have given the foregoing description of the worms found in the bronchial tubes of the porpoise, because I feel some difficulty in determining the exact place of the animal in any one of the entozoological classifications. From its length, cylindrical figure, the internal longitudinal canal, and tapering extremities, it may seem referable to the first order of Rudolphi, the NEMATOIDEA; and on these accounts I thought at first it might be regarded either as a *Filaria*, or a *Strongylus*. Notwithstanding its resemblance in figure and appearance, however, to the former *genus*, the peculiar acuminated unciform shape of the head and the want of separate sexual organs, or the androgynous character of the animal, presented an obvious objection; and while in general figure it approached the characters of the *Strongylus*, it was difficult to discover, either in the descriptions or figures, even of Rudolphi or of Bremser, the characters of the head and mouth. It was suggested by a friend, from comparing the character of the head with the descriptions of Cuvier, that it was an instance of the *Prionoderma* of that naturalist. But the *Prionoderma* of Cuvier is the *Pentastoma* of Rudolphi; and though the character of that genus,—*corpus teretiusculum vel depressum; os inter poros utrinque binos hamulum emittentes, lunatim positos*,—did at first sight appear to approach to that of the porpoise worm, it was in all essential respects totally different. The figures of *Pentastomata*, indeed, delineated by Bremser, in the large and beautiful illustrations of the system of Rudolphi,* are totally different from the animals which I found in the bronchial tubes of the porpoise, first in the greater brevity and more flattened figure of the body; secondly, in the distinct appearance of the five apertures, from which the Berlin entozoologist has derived its generic denomination; and thirdly, in the equally distinct appearance of the minute teeth, or serrated points which Cuvier regarded, and which I believe at one time Rudolphi esteemed, most characteristic of the *genus*.

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* Icones Helminthum systema Rudolphii Entozoologicum, illustrantes. Curavit Joan. Godof. Bremser, Med. et Chir. Doct. Viennæ, 1824. fol.

Some of this difficulty is probably owing to the nature of the subject itself; but I cannot help thinking that a good deal of it arises from the vagueness of the character assigned by the most expert and skilful entozoologists, and the great discordance between the methods and distinctions of each. Thus, not only do the arrangements of Rudolphi, Oken, Cuvier, Lamarck, and Blainville, differ most widely from each other in the numbers and subdivision of orders and genera; but specimens which in the arrangements of Rudolphi, are referred to one order and genus, are in those of Cuvier and Lamarck referred to orders and genera altogether different. Thus, some of the animals which Rudolphi referred to his third order or TREMATODA, are placed by Cuvier among his first order, or those of cavitary animals, the character of which is, to have an intestinal canal floating in a distinct abdominal cavity. It is, indeed, rather unfortunate that the system of Rudolphi, however elaborate and symmetrical in appearance, is really not very useful in furnishing precise and easily applied characters for distinguishing genera, and referring any given animal to its proper place. That this opinion is not confined to myself, I am well satisfied, from the changes proposed by Bremser himself, but especially from the very different arrangement observed by Cuvier and Lamarck.

Throwing, however, out of the question the ordinal, generic, and specific characters given by the best entozoologists, I find no instance of any animal similar to the one described in this paper, being mentioned in the writings of those most likely to have remarked the fact. The only animal observed in the bronchial tubes of the porpoise, on the authority of Klein, Peter Camper and Albers, is the *Strongylus inflexus* of Rudolphi.

The notice given by Klein, which is contained in the first *Missus Historiæ Piscium Naturalis promovendæ*, in notes on the account of the dissection of a porpoise by M. De la Motte of Geda, is so brief and general, that it is impossible to form from it any exact conclusion regarding the zoological characters of the animal meant. De la Motte first remarks, that "the *cavity* in which the petrous portion of the temporal bone was contained, was uniformly surrounded by innumerable minute worms, which to the eye, aided by a glass, bore the appearance of *lumbrici*;"* to which Klein simply adds, by way of comment, that several were white, but the majority reddish; the former seeming to be males, the latter females, as he had observed in the *lumbrici* of the wolf; that the body was traversed longitudinally by a purple-coloured transparent line; and that in number they must have exceeded a thousand.* In the figure which is afterwards given of three of these animals, whether from inaccuracy of delineation, or real difference, I cannot perceive any very close resemblance between the animals found by Klein, and those which form the subject of the present memoir. The longest figure, which is of one magnified, is that of worms tapering to a point at both extremities; and whether this be the effect of inattention or not, I am satisfied that it cannot serve to furnish any accurate information. The two which are represented to be of the natural size are between an inch and an inch and one-eighth in length, and as thin and delicate as a sewing thread.

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* "Cavitas in qua os latuerat petrosum cincta adhuc suo periosteo, *circum circa obsessa erat vermiculis innumeris*; oculo armato minutorum lumbricorum speciem referebant." Jacobi Theodori Klein, Hist. Piscium Nat. promovendæ Missus primus. Accesserunt Anatome Tursionum, &c. p. 27, Gedani, 1740, 4to.

The notice by the second author is equally brief and by no means precise; and all that he tells us is, that they were from six to eight inches long, and that they were found not only in the Eustachian tube and tympanal cavity, but to the amount of hundreds in the bronchial tubes.† From this short character, however, I should be inclined to regard the animals described in this paper as the same found by Camper, were the opinion not opposed by the character given by Rudolphi, who describes it as *capite obtuso, corpore retrorsum attenuato;* while it is manifest, from ordinary observation, that the head of the porpoise-worm is acuminated, and the posterior part of the body is not particularly attenuated. All the specimens of *Strongyli*, I must also observe, delineated by Bremser, are much smaller and proportionally shorter than the worm of the porpoise, (Tab. III. and IV.) excepting the *Strongylus gigas;* (Bremser, Pl. III. fig. 3.) from which, however, it differs entirely in the shape of the head, which is orbicular and obtuse, and in the mouth being surrounded by six flat *papillæ.*

Froelich, so well known in entomology, describes a worm found in the bronchial tubes of the hare, and which was about five or six inches long, less than $\frac{1}{6}$ of a line broad, with an obtuse head, without perceptible mouth and a pointed tail stretched longitudinally. Though the author denominates this animal a *filaria,* it must be remarked that this term has been applied in a general manner to every long hair-like worm, without much regard to zoological or anatomical pecularities; so that Rudolphi, who is inclined to think the animal described by Froelich as a *Trichosoma,* justly observes, *entozoa plurima hoc nomine confusa videntur, quorum forsan nullum veram filariam sistit.* Independent, however, of the small size and extreme tenuity of most of the *Trichosomata*, this genus is confined in its habitat with one or two doubtful exceptions to the birds.

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* Ibid. p. 31.

† Œuvres de Pierre Camper, &c. Tome ii. p. 348.

Upon the whole, I am satisfied from an extensive examination of the best authorities on this subject, that the parasitical animal which forms the subject of these observations has not yet been accurately described, and, if noticed at all, has been so in a manner too cursory and vague for exact reference to any precise system of classification. In forming this conclusion, however, I feel it impossible to assign the animal its fair situation among the genera of Rudolphi, in consequence of the vagueness of the characters given by that laborious entomologist. After saying that its general figure and structure show it to belong to his first order, the NEMATOIDEA, I feel it impossible to go further without the chance of going wrong. Resembling a *Filaria* in some circumstances, it approaches the *Strongylus* in others; and perhaps future observation only can supply us with examples of congenerous animals sufficiently marked in zoological and anatomical characters to enable us to pronounce with certainty on the exact place of the worm of the porpoise.

Since I dissected the specimen of porpoise now mentioned, I saw at the rooms of Dr Allen Thomson, to whom I mentioned the circumstance, an instance of the same species of disease in another specimen. From inspecting the lungs and bronchial tubes of this specimen, there is no doubt that it is the same worm, and in all respects in the same situation.

A more interesting topic to the physiological and pathological inquirer is, the manner in which these animals are formed in the lungs of the porpoise, and the effects which they produce; and though on these points I do not pretend to have determined every doubtful question, the circumstances in which I found the animals have suggested some observations which perhaps may not be altogether unseasonable.

I have in the first place to observe, that each pulmonary tubercle consisted of a thin membranous pouch or cyst, spherical or spheroidal in shape, about the size of a small pea or vetch, and sometimes less. The largest of these tubercles made a distinct projection of the pleura, which, however, was sound and free from vascularity, or albuminous exudation or false membrane; and after the division of the pleura, it required merely a few cautious incisions through the subserous filamentous tissue, in order to expose the cyst in which the caudal extremity of the animal was imbedded. The cavity thus exposed was formed by the mucous membrane at the extremity of the bronchial tubes being dilated into a spherical or spheroidal pouch or *ampulla*, in which the further or small end of a bronchial tube terminated. The mucous membrane thus expanded, though sometimes slightly reddened, and containing a serous fluid surrounding the coiled up extremity of the worm, was in no instance thickened or indurated, or otherwise inflamed, nor was the surrounding filamentous tissue reddened or condensed. When the worm thus exposed was seized by the forceps it could be drawn out, if with ordinary care, without laceration or rupture; and in every instance the coil thus extracted was found to remove one of the tracheo-bronchial worms. When the worm was in this manner extracted, the cavity emptied was hemispherical, and presented at its greatest depth a minute aperture or pore,—the end of the bronchial tube which terminated in it; (See Fig. 4,) nor was any induration or tubercular appearance left in the vicinity.

Each minute or ultimate bronchial tube terminated, I found, in a dilated membranous cavity or cyst; each minute tube contained a single worm; and each tuberculoid cyst was occupied by a single extremity of a worm coiled up in the smallest possible space, so that when the coil was unravelled it seemed singular that such a length of worm could be rolled up so as to occupy a chamber so small and confined.

From the position and arrangement of these worms, I think it manifestly results that they are generated, or begin to grow, in the ultimate extremities of the bronchial tubes, or those cavities denominated the pulmonic vesicles; that in these they are at first entirely coiled up, but begin to be unfolded as they increase in size; and that the unciform head first extricating itself shoots into the bronchial tubes, and then extends into the *bronchus* and windpipe. Superficial observation alone might lead to the supposition that they enter the windpipe, and thence extend into the tubes and pulmonary vesicles; but this idea must instantly be renounced when we consider that the largest and most fully grown worms alone extended into the windpipe, and that many minute ones, not longer than horse hairs, were found with the caudal extremity curled up as usual in the dilated vesicles, and a small portion of the cephalic extremity shooting into the corresponding bronchial tubes. The worms, I have already said, were by far most abundant in the middle order of bronchial tubes; and it was exactly the middle part of the lung to which these tubes are distributed that was most abundantly occupied with the largest tuberculoid masses. The only exception to this arrangement was the fact, that in some instances a large tubercle when laid open allowed the extraction of but a small or rather short worm; but in this case, it must be observed, the exception is only apparent; for the amplitude of the tubercle and its cavity depended on the animal being as yet imperfectly unfolded and protruded into the air tubes.

The question of the primary origin of these animals, and the mode in which they came to occupy this situation, involves an inquiry of a most difficult and complicated character,—an inquiry in which the most able physiologists have adopted the most opposite and apparently irreconcileable views. Of these discordances, I cannot hope to divest the subject; but I shall advance some considerations by which it may be partially elucidated.

Notwithstanding the strength and plausibility of the arguments adduced by Bremser, in favour of spontaneous or septic generation, and against that by the evolution of *ova* or germs, I cannot say that the doctrine appears to me to possess so much probability as the opposite one. It seems a supposition so inconsistent with the known laws of the propagation of living bodies, to imagine that they are generated spontaneously, or even by what Bremser denominates *primitive formation*, that is, a new formation for every individual species as it becomes known to the naturalist,—that it seems impossible to admit it on grounds so narrow and unstable. Most of the arguments, indeed, adduced by Bremser, are of a negative description, and are derived chiefly from the difficulty of tracing the formation of *entozoa* in all cases to the previous existence of *ova* or germs. But the difficulty of this task does not imply its impossibility; and it may be, that facts afforded by future observation may supply those links in the chain of evidence which are at present wanting.

In the case of the worms of the porpoise it seems by no means difficult to comprehend the mode of formation on the theory of Harvey, Rhedi, Valisnieri, and Andry. According to that hypothesis, it is admitted that the *ova* of all animals and plants, however minute, however multiplied, and however little known, are diffused in the atmosphere of the globe, the waters of the sea, rivers, and lakes, and the alluvial covering of the earth, and merely require favourable circumstances to foster them into life. These *ova*, it is further presumed, may lie for ages dormant or inactive, until those favourable conjunctures take place on which their animation depends. In the case of parasitical animals the *ova* never are animated, unless placed in contact, by some means or other, with the body and organs of the animal or animals, to which they are especially assigned. In the application of this doctrine to the animal of the porpoise, we are guided by a few facts which deserve attention.

The first which I notice is, the involuted or coiled-up disposition of the animal in the broncho-pulmonic cysts or *ampullæ*. From this I conceive it may be inferred that the *ovum* was originally placed in the most remote and sheltered part of the bronchial tube, where it was to remain undisturbed, and in a temperature sufficiently elevated to insure animation.

The second fact to which I advert is, that the ultimate chambers of these tubes, it is also to be considered, were much more capacious than the tubes themselves,—a circumstance which proves that these chambers or cavities were dilated, and were originally very small, or, in other words, contained a very minute body, which gradually enlarging, necessarily produced dilatation and enlargment of the cavity itself.

The third fact to which at present I advert is, that, as the animals attained a large size, they began to be evolved, and to extend into the bronchial tubes towards the windpipe. This, I think, shows clearly that they were originally produced in the pulmonic vesicles or bronchial extremities from *ova* deposited in those extremities.

A fourth fact, which I think should not be omitted, is, that in those bronchial *ampullæ*, where the shortest and smallest coils were contained, the animal was always proportionally larger and more grown, and more advanced into the windpipe. From this, which is nearly correspondent with the last stated circumstance, I think it may be justly inferred, that the animal grows in a coiled up state originally, and only begins to be uncoiled after it has attained such size in the involuted form, as to find the dilated chamber of the bronchial tube too small to accommodate it any longer. It thence extends into the tube and *trachea*, beginning by the head.

These facts and arguments would be of little or no moment, were they not combined with the peculiar mode of respiration of the cetaceous animals. Immersed at all times in the waters of the deep, yet compelled by the disposition of their respiratory organs to inspire atmospheric air,—unmixed with or separated from water, they, nevertheless, are unable to do so with such accuracy as entirely to exclude the briny element from the windpipe. It hence results, that all minute bodies suspended or floating in the sea-water may be readily and repeatedly conveyed into the windpipe, and even into the bronchial divisions, during the acts of respiration.

From these facts and arguments, therefore, combined with the peculiar respiration of this class of animals, I think it results as certainly as we can expect on a subject of this nature, that the *ova* of the porpoise worms, originally floating in the waters of the sea, are carried during the acts of respiration into the windpipe and bronchial tubes, and successively conveyed to the most sheltered extremities of the latter. It is not to be supposed that all the *ova* that entered the *trachea* with the water during respiration were conveyed to the bronchial extremities. Many would be expelled by the periodical expulsion of the water from the windpipe by the blow-holes; but as these *ova* are like those of fishes, innumerable, enough would be left to form a worm in the extremity of each minute bronchial tube. Introduced also as an inconceivably minute point or grain, the process of developement must have taken place in the coiled up or involuted form ; and it could only be after the animal had attained in this position a certain size, that the process of unravelling and extension could begin by the head advancing into the bronchial tube towards the *trachea*. When this process had once commenced, it would proceed regularly and steadily as the animal continued to enlarge ; and it would terminate only when the animal was completely uncoiled, and had thus advanced into the bronchial tube and windpipe.

We are now, I think, enabled to explain the reason why the cetaceous animals are often found dead at sea, or caught in nets, or in a state so languid and feeble as to become an easy prey to the fisherman. It is by no means uncommon to meet with whales even in a sickly, languid, and dying condition, without any injury or other cause adequate to account for it. The porpoise is very often found in cod nets, either so weak as to be unable to extricate himself, or actually dead, without apparent cause.

The animal which I dissected was found dead in a net with many living cod and other fishes; and several animals of the same genus are caught every season in the same condition in the Firth of Forth. I do not mean to assert that every whale, every dolphin, and every porpoise that dies a natural death is suffocated by the horde of worms contained in the windpipe and bronchial tubes ; but, from the number of porpoises in which these animals have been found, I think it manifest that it constitutes a frequent cause of fatal disease. It is unnecessary here to enter into the consideration of the question, whether a previous cachectic or unhealthy state may not predispose the cetaceous family to become the prey of these parasitical destroyers ; but it is manifest, that when they have once established themselves in the pulmonic vesicles and bronchial tubes, the function of respiration must be very nearly altogether annihilated. At first, when introduced in the form of *ova*, they must have produced little or no inconvenience. But afterwards, when they begin to enlarge and fill up the pulmonic vesicles, they must prevent the admission of air to the pulmonic membrane and vessels, and the blood of the pulmonary artery from undergoing the changes requisite for vital action. When the worms increased so much as to extend into the *bronchi* and *trachea*, respiration must have been so much impeded, that slow but sure *asphyxia* must have been produced, as accurately as if a ligature had been applied round the windpipe.

The debility and exhaustion of the animal must have been extreme. Though the muscles were red and not much extenuated, nor was the fat particularly absorbed, the chambers of the stomach were quite empty, excepting a few of the teeth of the turbot, and some broken shells; and the intestines contained only a little pulpy matter and mucus.

I cannot conclude these observations without remarking, that, though the appearance of tuberculation of the lungs was so distinct and conspicuous, there was not in these organs a single genuine tubercle; and I think it is not unreasonable to infer, that, had the animal survived till the worms had been extricated from the lungs and bronchial tubes, no appearance of tuberculation would have been left.

It may be imagined by some that the facts now adduced give some plausible support to the hypothesis of Dr Baron of Gloucester, regarding the alleged origin of tubercles from hydatids. To obviate all misconception on this point, I have stated the facts as I observed them; and I think every impartial reader will agree with me in thinking, that they tend in no way to afford any confirmation of these views; and that they are rather opposed to them.

EXPLANATION OF THE PLATE.

Fig. 2. View of the bronchial tube of the left lung with the worms *in situ*.

Fig. 3. View of three worms, as nearly as possible of the natural size, with the caudal extremity of one coiled up.

Fig. 4. One of the bronchial or pulmonic *ampullæ*, or dilated chambers, after the extraction of a worm.

Fig. 5. Magnified views of the head of two specimens of the worm, showing the unciform tapering appearance, at the extremity of which is an aperture which seems to be the mouth. The other *papilla* is probably the organ of generation.

Fig. 6. Outline of the figure of the animal found in the liver.

ART. IX.—*Ninth Report of the Edinburgh Surgical Hospital, from February to August* 1832. By JAMES SYME, Esq.

SINCE last report the Hospital has been considerably enlarged by the addition of a Lecture-room, which allows the apartment formerly employed for that purpose to be converted into a ward for the reception of patients. The contributions of the public have increased from L. 200 to L. 240 during the year terminating on the 8th of May last, which was the third from the commencement of the institution. The number of patients has also been much extended, notwithstanding the alarm of cholera, which it is known has operated in deterring them from leaving the country. 2548 persons labouring under surgical diseases applied for relief,—a number exceeding that of the preceding year by 555. Of these 340 were admitted into the house, the remainder being treated as out-patients. The tabular statement subjoined will show the particular affections for which application was made.

OUT-PATIENTS.

Abscess,	139
Absorbents, inflamed,	1
Amaurosis,	2
Anthrax,	2
Aneurism by anastomosis,	1
Aneurism of aorta,	2
Aphthæ,	11
Anchylosis,	1
Anus, excoriations of,	1
Boils,	17
Bruises,	228
Bronchocele,	1
Burns,	44
Bursæ, inflamed,	6
Buboes,	15
Cancer of lip,	3
Cataract,	3
Chancres,	10
Concussion of brain,	8
Calculus in kidney,	1
——— in bladder,	1
Curvature of spine,	2
Cutaneous eruptions,	163
Dislocations of shoulder,	8
——— elbow,	1
——— wrist,	1
——— thumb,	1
Dropsy of joints,	16
Deafness,	11
Delirium tremens,	1
Epulis,	1
Erysipelas,	33
Epistaxis,	1
Exostoses,	12
Fistula in ano,	4
——— lachrymalis	1
Foreign bodies extracted,	8
Frœnum linguæ divided,	1
Fractured humerus,	5
——— through neck,	4
——— condyles,	4
——— fore-arm,	4
——— radius,	18
——— ulna,	1
——— metacarpus,	4
——— phalanges,	3
——— thigh,	2
——— tibia,	2
——— fibula,	3
——— metatarsus,	1
——— ribs,	11
——— clavicle,	5
——— nose,	1
——— lower jaw,	1
Ganglion,	8
Glands enlarged,	14
Gonorrhœa,	52
Hernia humoralis,	12
——— inguinal	3
——— femoral,	1
Hæmorrhoids,	7
Hæmaturia,	1
Hydrocephalus,	1
Hydrocele,	2
Iritis,	2
Inversion of nails,	2
Joints diseased,	31
Moveable cartilage,	2
Medical,	14*
Mollities ossium,	2
Necrosis,	8
Nodes,	5
Noli me tangere,	1
Œdema,	28
Ophthalmia,	138
Ozæna,	1
Ostitis,	4
Omalgia,	1
Opacity of cornea,	2
Onychia,	16
Otorrhœa,	4
Paralysis, partial,	26
Prolapsus ani,	2
Periostitis,	17
Paraphimosis,	4
Polypus nasi,	4
——— auris,	1
Rheumatism,	75
Retention of urine,	7
Rachitis,	2
Stricture of urethra,	4
——— of rectum,	1
Sinuses,	6
Scalds,	5
Sciatica,	9
Strains,	124
Sore throat,	41
Scirrhous mamma,	2
Staphyloma,	1
Superfluous fingers,	1
Teeth extracted,	228
Tinea capitis,	35
Tonsils, enlarged,	8
Tumours,	13
Ulcers,	268
Varix,	8
Warts,	6
Wounds incised,	74
——— lacerated,	9
——— punctured,	34
	2208

IN-PATIENTS.

Abscesses,	6
——— lumbar,	1
——— psoas,	2
Amaurosis,	1
Anthrax,	2
Bronchocele,	1

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* Medical cases, though often presented, from mistake of the patients, are not entered on the books, unless their circumstances are very particular.

Bruises,	17
Buboes,	5
Burns,	6
Cancrum oris,	1
Cancer of lip,	9
Cataract,	7
Chancres,	2
Concussion of brain,	5
Curvature of spine,	1
Cutaneous eruptions,	6
Cicatrix removed,	1
Diseased elbow-joints,	4
——— thigh,	3
——— hip-joint,	2
——— foot,	1
——— tibia,	5
——— knee,	17
——— olecranon,	1
——— wrist,	2
——— hand,	1
——— back,	3
——— ancle,	4
——— fingers,	2
——— toes,	2
Dislocation of elbow,	1
Dropsy of knee-joint,	3
Erysipelas,	8
Erythema,	2
Entropium,	2
Ectropium,	1
Enlarged humerus,	1
Epistaxis,	1
Exostosis,	1
Fistula in ano,	11
——— in perinæo,	1
——— lachrymalis,	2
Fractures of thigh,	7
——— patella,	3
——— tibia,	1
——— fibula,	2
——— humerus,	1
——— back,	1
——— lower jaw, compound,	1
——— finger do.	1
Ganglions,	5
Glands enlarged,	3
Gonorrhœa,	2
Hæmorrhoids,	6
Hare-lip,	1
Hernia humoralis,	1
Hernia strang. inguinal,	1
Hæmatocele,	1
Hypopium,	1
Hydrocele,	12
Imperforate vagina,	1
Iritis,	1
Inflamed varicose veins,	1
Morbid growths of Arm,	2
——— ——— cheek,	1
——— ——— face,	1
——— ——— jaw, lower,	1
——— ——— mamma,	6
——— ——— side,	1
——— ——— superior maxilla,	1
——— ——— testicle,	2
Nebula,	1
Nævus,	1
Necrosis,	6
Œdema,	1
Omalgia,	1
Onychia,	2
Ostitis,	1
Ophthalmia,	1
Paralysis,	2
Polypus nasi,	1
——— uteri,	1
Periostitis,	1
Ranula,	1
Retention of urine,	3
Sciatica,	2
Sore throat,	2
Sinuses,	8
Sprains,	8
Stricture of rectum,	2
——— of urethra,	3
Scalds,	4
Tic douloureux,	1
Tonsils enlarged,	2
Twisted septum,	1
Ulcers,	41
Ulceration of nose,	2
Warts on labia,	1
Wounds incised,	4
——— lacerated,	6
——— punctured,	2
——— gunshot,	1
Warts on anus,	1
Wry-neck,	1
Medical.	4
	340

OPERATIONS.

Amputation of hip-joint,	1
——— thigh,	4
——— below knee,	3
——— partial of foot,	1
——— toes,	1
——— arm,	2
——— fore-arm,	1
——— fingers,	4
Excision of mamma,	4
——— elbow-joint,	1
——— fatty tumours,	4
——— superior maxilla,	1
——— testicle,	3
Excision of cancer of lip,	7
Cataract,	1
Fistula in ano,	11
——— lachrymalis,	1
——— in perinæo,	1
Hernia, strangulated,	1
Hydrocele,	12
Hare-lip,	1
Polypus nasi,	2
——— uteri,	1
	68

In regard to the period now under consideration, before proceeding to speak of individual cases, it may be well to make some remarks on the tendency to Erythema which has prevailed to a very unusual extent in this city during the spring and summer of the present year. As this term has been used to denote different morbid conditions, the precise meaning to be attached to it must be explained in the first place. It is admitted, that inflammation of the skin may either proceed directly from local irritation, or be preceded by constitutional disturbance, which seems to be its exciting cause. When of this latter origin, the inflammation is sometimes attended with a slightly swelled, smooth, red, glossy state of the skin, and terminates in vesication, followed by desquamation of the cuticle; it is then named Erysipelas. On other occasions there is hardly any perceptible swelling,—the redness is of a lighter or rosy hue,—and there is no vesication; when the disease may be designated Erythema. And, along with both of these forms of inflammation of the skin, proceeding from constitutional disturbance, the subjacent cellular substance may be affected, in which case there is considerable diffused swelling, and a risk of extensive suppuration or sloughing; a complication which is expressed by prefixing Phlegmonous to the other titles. Cullen employed erythema to denote inflammation of the skin proceeding from local causes; but it seems unnecessary to appropriate any term for this purpose, since less confusion would be occasioned were it in these circumstances simply styled inflammation of the skin. On the other hand, it is of great importance to distinguish the form of constitutional cutaneous inflammation, to which the term Erythema has now been applied, because there are here certain grounds of distinction which must be carefully attended to in practice.

Erythema does not show nearly so much predilection for the integuments of the head as erysipelas, and has a much greater tendency to spread, often leaving hardly any part of the body free from its successive attacks. It is usually preceded and accompanied by much more constitutional disturbance than erysipelas, and seldom, if ever, appears in a person on whose body there is not an ulcerated surface of more or less extent. It does not occur immediately after the infliction of incised wounds, but after the granulating process has been established,—sometimes not until the cure is nearly completed. It is preceded by severe, prolonged, and frequently repeated rigors, with bilious vomiting and headach. It commences often very insidiously by a small light-coloured redness at the edge of the sore, and then spreads so capriciously, as to render vain all attempts at calculation or anticipation. It is attended with a small frequent pulse, burning heat of skin, insatiable thirst, nausea, a disposition to retch, loss of appetite, yellowish-white furred tongue, extreme general uneasiness, haggard brownish-yellow complexion, great bodily and mental weakness, and, in the progress of the disease, confusion of ideas, occasionally amounting to delirium. It is very tedious and distressing, but seldom fatal. Of the cases that occurred under my care during the last year, there were only two that did not recover. One of these has been mentioned in the preceding Report, viz. Mrs Buchanan, whose breast was removed at her own house; and the other was that of Mrs Grey, aged 72, who had a cancerous ulcer of the mamma cut out in the Hospital on the 16th of June. She had come from the country two days previously, and could not be persuaded to let the operation be delayed longer. Slight erythema of the breast followed, and was attended with bronchitis, to which she had been subject. She died on the 28th.

The treatment found to be most efficient in the first instance, is the administration of an emetic, which, if employed before the redness appears, often seems to cut short the disease. When the erythematous blush shows itself, little can be done to arrest its progress, and the great object is then to palliate the patient's sufferings, and support his strength, so as to prevent him from sinking under the disease. Bleeding, which is so useful in erysipelas, does not seem to be of any service, whether local or general. Opiates afford great relief from the pain and burning heat, and ought to be given frequently in moderate doses. The secretions should be promoted by calomel and the saline purgatives, and until decided indications of weakness appear, the diet of the patient should consist of little more than mild diluents to quench his thirst, and a little farinaceous food. Whenever the strength seems to be failing, whether this be in the advanced stages of the disease or at its commencement, owing to the previous weakness of the patient, nourishment and stimulants must be diligently supplied. Beef-tea, animal jelly, arrow-root, with wine, or spirits and water, are the best means for this purpose. It may finally be remarked, in regard to the treatment, that tartrate of antimony, which, when given internally, proves of so much use in erysipelas, does little or no good in erythema.

The predisposing cause of erythema is undoubtedly some peculiarity of the atmosphere; but this, though often resulting from bad ventilation, cannot be ascribed to it alone, since such an error was carefully avoided in the Surgical Hospital, and the disease occurred fully as often, in proportion, out of doors. It repeatedly happened that patients operated on in the Hospital escaped, while, at the same time, others suffered in various well-aired parts of the city. Operations on the chest, such as those for removing the mamma, or dilating sinuses of the breast or axilla, were most frequently followed by the disease. It did not occur in any case of *fistula in ano*, but proved very troublesome in one of lithotomy. The gentleman who was the subject of it seemed on the fifth day after the operation to be nearly free from complaint, when he shivered, and a slight blush appeared on the left hip. It then attacked the right one, travelled round the loins and front of the abdomen, descended to the scrotum, and at length terminated its course by going down the limbs, thus prolonging his recovery to six weeks. Amputation was not followed by erythema, except in a few cases where the fingers were removed.

Diseases of the Mamma.

Seven operations of excision were performed for diseases of the mamma, of which the following are the most remarkable. Margaret Turpey, aged 48, married, was admitted on the 18th of June, on account of disease in her left breast. The gland was considerably enlarged, hard, and heavy, but quite moveable. The tumour did not pass gradually into the surrounding parts, but was distinctly circumscribed. The axilla of the same side was filled with enlarged glands, which distended the skin, and were deeply rooted in the cavity. The patient complained of occasional severe pain in the breast. Her appearance was not unhealthy, and she stated that the disease had been noticed ten months before, having rapidly increased during the last five weeks.

This seemed to be one of those cases of Carcinoma which, though possessing the anatomical characters and symptoms distinctive of the disease in general, and presenting the unfavourable circumstances of rapid progress, together with affection of the glands, might, nevertheless, judging from the circumscribed form of the tumour, be regarded as not having a great tendency to malignant action. It was therefore thought right to remove the mamma, and the operation was performed on the 25th.

A section of the tumour showed the diseased structure adhering to, but quite distinct from the healthy tissue of the gland. It was dense, semipellucid at the edges, and of a pale brownish colour. It extended into the nipple.

The patient did very well for a few days, but was then attacked with erythema, which recurred again and again, reducing her strength to a very low ebb, and in fact rendering her case for some time apparently hopeless. At length she became convalescent, and then it was remarked that the axillary swelling had entirely disappeared. She was dismissed on the 4th of August.

It has been thought right to relate this case particularly, with the view of directing attention to the diagnosis of the important difference between the diffused and tubercular forms of carcinomatous mamma. Margaret Dowell, aged 52, married, from Arbroath, was operated upon on the 7th April, under nearly similar circumstances, except that the disease was of longer standing, and made a good recovery, without suffering from erythema. She was dismissed on the 30th, and continues well. One of the first patients operated on in the Hospital was Janet Anderson. She had a tumour of the kind described in her right breast, and a glandular swelling of the axilla. The mamma was excised in May 1829. She continues well, and is now employed as a nurse in the house.

Cystic Tumour of Mamma.—Mary Paton, aged 44, from Anster, was admitted on the 24th of May on account of a tumour in her right breast. It was about the size of a turkey's egg, of very firm consistence, irregularly nodulated on the surface, and extremely moveable, so that it could be pushed freely about in all directions. The first appearance of swelling had been observed two years before, and within the last few weeks a great enlargement had taken place. The patient complained of a burning sensation in the tumour, and felt very uneasy from apprehension of its consequences.

Under the supposition that the growth was of a solid fibrous nature, excision was performed on the 28th, and as the mamma bore a small proportion in bulk to the diseased mass no attempt was made to save it. On the contrary, nearly the whole of the gland was taken away, partly to facilitate the operation, and also to prevent the trouble from hemorrhage, which is apt to be encountered when tumours are dissected *out* of the breast. The morbid formation proved on examination after removal to be composed chiefly of cysts; and, besides the principal mass, there were many small independent spherical bags interspersed in the surrounding glandular tissue, so that there was reason for congratulation on its free excision. The patient did well, with the exception of a slight attack of erythema, and was dismissed on the 10th of June.

Chronic Abscess of Mamma.—Janet Fisher, aged 36, from Lanark, admitted 31st July. Between the right mamma and ribs there was a tumour the size of an egg, having a convex somewhat irregular surface, and adhering immoveably to the parts subjacent, though the gland felt quite natural and unconnected with it. The patient stated that for many months she had felt pain in the side, and that the swelling had gradually appeared during the last six weeks. As an obscure feeling of fluctuation led to the idea that the tumour depended on the presence of fluid, an incision was made into it while the integuments and gland were drawn upwards, so as to render the intervening parts as thin as possible. An ounce or two of pus escaped, and the knife was again introduced, with the finger for a guide, to divide some partitions which were felt running partially across the cavity. No unpleasant symptom followed; the discharge, though at first profuse, gradually diminished; the parietes of the abscess became softer; and she has gone home nearly well.

Sinuses of the Mamma.—Several very severe cases of this condition of the breast occurred, and were remedied without having recourse to the practice of free incision, which is regarded by many as essential to recovery; all that seems necessary is to enlarge the sinuses with the knife, with sufficient freedom to prevent any obstruction to the exit of their discharge. Rubbing the hardened parts with camphorated-oil, and injecting occasionally a solution of the sulphate of zinc, together with carefully supporting the affected gland, if it be pendulous, promote the cure. Some of the patients came from distant parts of the country, believing that they laboured under malignant disease of the mamma; but all got well with the assistance of the measures just mentioned.

Diseases of the Face, Neck, and Jaws.

Cyst of the Thyroid gland.—Mary Hamilton, aged 44, from Torphichen, applied at the Hospital two years ago, on account of a tumour in the neck, which was smooth, oval, elastic, and about the size of a goose's egg. It followed the motion of the larynx, and evidently depended on an enlargement of the left lobe of the thyroid gland. The patient complained of pain in the swelling, not constant, but frequent, and extremely severe; and she could hardly tolerate the slightest pressure on it, as that made during the necessary examination of its consistence and connections. The tumour had existed for three years, and gradually increased.

Under the use of blisters and iodine, she obtained considerable relief, but still suffered great inconvenience from the disease. She presented herself on the 5th of April; and then, as the swelling was not so morbidly sensible of pressure, a fluctuation was perceived in it. By means of a trocar, a quantity of clear serum was withdrawn; and as the bag soon filled again, a seton was drawn through the anterior part of its parietes.

Little pain or swelling followed; and the cord of cotton which had been introduced was taken out in the course of a few days. The inferior opening then healed; and it was judged proper to enlarge the upper one with the knife, so as to admit the interposition of a piece of lint between its edges. She returned home on the 2d of June. There is still a little serous discharge, but no perceptible swelling or pain.

Bronchocele.—Margaret Welsh, aged 72, was admitted on the 18th of August, on account of a very large bronchocele. It nearly equalled the size of the head, possessed a firm elastic consistence, and had a very unequal surface, presenting large round irregular projections. It had existed for forty-two years. She was in the Hospital two years ago, since which the tumour had considerably enlarged. As blistering and iodine were freely employed formerly without material benefit, and as she suffered no inconvenience farther than from the weight and bulk of the swelling, except pain of the head from obstruction of the circulation, which admitted of relief from the application of a few leeches, it was not thought proper to propose any active measures of treatment.

Medullary Sarcoma of Lower Jaw.—Adam Mather, aged 57, from Alnwick, applied on the 2d of May, on account of a tumour of the jaw, which at first sight seemed a very favourable subject for excision. It extended from the *symphysis* to the *ramus*, elevated the integuments in the form of a large round swelling, and encroached inwards considerably on the cavity of the mouth. The grinders were loose and imbedded in the substance of the growth, which possessed a soft consistence. The patient stated that the tumour had appeared about two months before—that it was at first external to the jaw, and moveable—and that it had increased very rapidly of late. He complained of great pain, which was particularly severe at night. His countenance had a doughy unhealthy appearance.

Though there did not seem any impossibility in removing the whole of the disease, it was not judged expedient to make any attempt with this view, as the extreme rapidity of growth, and tendency to spread, together with the patient's appearance, rendered any permanent benefit from such an operation quite hopeless. The integuments of the cheek soon became adherent to the tumour, acquired a purple colour, and seemed on the point of ulcerating or sloughing. Instead of this an opening took place into the mouth, and discharged incessantly an immense quantity of exceedingly fetid matter. The whole side of the face affected became œdematous; the pulse intermitted; and sick fainting fits repeatedly threatened immediate dissolution. The patient felt a great desire to return home, and accordingly did so on the 13th of June.[*]

Cancer of the Face.—Elizabeth Rich, aged 64, from Stromness, in Orkney, John Macdonald, aged 46, from Helmsdale, in Sutherlandshire, and Alexander Beaton, aged 36, applied on account of cancer, originating in the lip, and extending to the jaw bone. In all of these cases it would have been necessary, in order to extirpate the disease, to take away not only the whole of the integuments of the chin, but also the front part of the jaw ; and there seemed so little encouragement to undertake this severe operation, when the rapidity of the morbid process, the unhealthy appearance of the patients, and the tendency to glandular enlargement observed in them were taken into consideration, that no attempt of this kind was proposed.

Abscess of Antrum.—Mary Burns, aged 29, applied on account of severe and incessant headach. It was observed that the right maxillary bone was very much enlarged, so as to protrude the cheek and depress the palate, whence the roof of the mouth, instead of being arched, was gutter-shaped. She had occasionally a discharge of offensive matter from the nose, but suffered no other inconvenience from the disease, and could not without difficulty be persuaded of the origin from which her complaints proceeded. A stump that occupied the place of the second bicuspid tooth was extracted, with the view of ascertaining the state of the antrum, and a quantity of fetid pus immediately escaped. A few days afterwards, as the symptoms were not materially relieved, a larger aperture was made into the cavity by separating the cheek from the gum, and breaking down the thin shell of bone that constituted its anterior wall. The patient then gradually ceased to suffer from the pain in her head, and the maxillary bone has already advanced considerably in the return to its natural size.

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[*] The tumours of the jaw which afford the most favonrable opportunities of performing excision of the bone, are those in which the morbid growth is of a fibro-cartilaginous nature. Perhaps the most remarkable case of this kind is one that occurred lately in the practice of Dr Martin of Chatham, who was kind enough to send me the preparation. It was removed after death, which happened four years from the commencement of the disease, in consequence of repeated hemorrhage. It weighed eight pounds, and protruded out of the patient's mouth in a mass that measured at its neck twenty-one inches in circumference. The bone was enormously expanded, so as to form a sort of shell under the tumour and numerous septa, in the interstices of which lay a white, tough, elastic fibrous substance constituting the great bulk of the excrescence. The patient was a female twenty-four years of age ; and it is much to be regretted that an operation was not performed before the disease had gone too far, as, in all probability, the cure would have been permanent. The jaw of which the removal is related in the 97th number of this Journal, was precisely similar in all respects, except that it weighed only four pounds and a half, and the patient continues quite well, masticating and articulating perfectly, and having nothing very disagreeable in his appearance.

Polypus of the Nose.—William Donaldson, aged 14, from Coldstream, was admitted on the 4th of August on account of a large polypus in the left nostril, which descended into the pharynx so as to project considerably below the margin of the palate. It occasioned great difficulty of articulation, and when he slept threatened suffocation, his respiration being then so noisy and irregular, and executed with such violent struggles, that no one could witness it without alarm. He had repeatedly lost large quantities of blood from the nose since the commencement of the disease, which was about eight months previous to the time of his application.

The loop of a doubled silver wire was introduced through the nostril into the pharynx, and passed round the excrescence. The ends of the wire were then passed through a small silver double cannula, and tightened with moderate force, after which they were fastened to the wings of the instrument. The patient suffered no great inconvenience. Each succeeding day one of the ends was disengaged and pulled tighter, and on the seventh day after the wire was applied, the cannula came away with hardly any appearance of the loop remaining. The polypus still continued in its place, but when seized with a hook, readily came away and was extracted through the mouth.

Fibrous Polypus of the Nose.—Thomas Wood, aged 15, from Gifford, entered the Hospital last January on account of a polypus in the right nostril, which could be seen by looking into the nose, and felt by introducing the finger behind the soft palate. It had existed for several months, and was increasing rapidly. From an attempt, which was made soon after his admission, to effect the removal of the tumour by extraction, it was ascertained that it possessed the firm fibrous structure that has been particularly remarked and described by M. Dupuytren.* It could be torn longitudinally, but resisted efforts to rupture it transversely no less obstinately than if formed of tendon, and bled most profusely when injured. In accordance with the conclusion of M. Dupuytren, that this kind of growth is certainly and speedily fatal if allowed to proceed, and that the only method of effectually eradicating it is evulsion, various attempts were made to force the polypus away, both by the nose and mouth. Forceps with strong blades and projecting teeth were constructed for the purpose, and the nostril was slit open to permit their more effectual application. Nothing but some small shreds could be extracted, and it was at length ascertained that the attachments of the tumour were so extensive as to render the operation quite impracticable. In these circumstances the patient was dismissed, the nostril having healed without leaving any trace of its division.

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* Sabatier, Medecine Operatoire.

He returned on the 12th of August much reduced in strength and altered in his appearance. The polypus presented itself both beyond the nose and palate, and he had repeatedly lost considerable quantities of blood. It was now evident, that, unless the disease were removed, he must speedily sink under it, and the urgency of the case seemed to warrant the severest measures. It had been ascertained that the attachments extended all the way round the posterior margin of the nostril, and there was reason to suppose, that, if the superior maxillary bone was removed, they would be rendered accessible. This operation was accordingly performed on the 21st, in the manner described in last Report, and without any difficulty except what proceeded from the resistance of the patient, who lost all command of himself. After the bone had been removed it required very great force to disengage the tumour from its connections. It was taken out perfectly entire, and measured four inches in length, two and a half in breadth, and one and a half in thickness. The superior palatine artery was the only deep-seated vessel that required to be tied. The cavity was filled with pieces of lint, and the edges of the wound were stitched together. On the evening of the day succeeding that of the operation, as the patient's pulse was full and frequent, and his breathing difficult, twelve ounces of blood were taken from his arm. On the following day his breathing was easy, the wound looking as if about to heal entirely by the first intention; he took his food, and seemed doing quite well. On the morning of the next day a patient in the same room spoke to him at 5 A. M. when he said he felt quite comfortable. At 6 he was found to be dead.

On dissection the unexpected discovery of another polypus was made. It originated from the left nostril, and adhered not only to the whole of the upper and lateral margin of its pharyngeal opening, but also to the base of the skull. It no doubt escaped observation at the time of the operation from having been pressed out of reach by the larger one, and had probably enlarged subsequently, as well from being no longer compressed, as from the irritation which it necessarily suffered. This polypus could not have been eradicated, so that the only subject of regret in regard to the operation is, that it was undertaken at all. The hopeless state of the case, and the well ascertained fact that fibrous polypus exists almost invariably not in numbers, as the softer excrescences from the nasal cavity do, but singly, will, it is hoped be regarded as a sufficient justification of the attempt. No other morbid appearance could be perceived, so that the cause of his death is rather obscure.

Melanotic Tumour of Eyelid.—Christian Wilson, aged 65, from Anster, was admitted on the 21st of August on account of a dark-coloured sloughy-looking tumour about the size of the half of a small orange, which concealed from view the right eye, unless held up, when it was seen to grow from the margins of the eyelids, occupying about a half of the upper, and a third of the lower one, from the outer angle. A small tumour of fleshy appearance lay near the superior *punctum lacrymale* of the same eye. The patient stated that the disease commenced eight years ago, and that it had been twice removed, once when little larger than a pin's head, and again when nearly as large as at the time of her admission. It bled freely when touched.

The tumour, together with the portions of the eyelids to which it adhered, was removed by means of curved scissors. The smaller excrescence near the inner angle was excised in the same way. Two arteries were tied, the cut edges of skin and conjunctiva were stitched together, and cloths wet with cold water were then applied. A section of the morbid structure displayed the characters of melanosis.

Diseases of Urinary and Genital Organs.

Stricture of Urethra.—James Buchanan, aged 35, from Forfarshire, applied at the Hospital on the 9th of June, in the belief that he laboured under stone in the bladder. The symptoms were more indicative of stricture than stone, and a very tight one was discovered at the bulb. He had been complaining for two years. The ordinary treatment of dilatation by steel bougies introduced for a few seconds every third or fourth day soon restored him to perfect health, and he was dismissed on the 28th of June. Several other cases of the same kind were treated in a similar manner, and with a similar result.

Calculi cut out of the Prostate.—This case, though it occurred in private, may be mentioned on account of its rarity. The gentleman who was the subject of it had for more than a year suffered from pain, and frequent desire to make water. His age was 19. A bougie being introduced, detected a small concretion in the prostatic portion of the *urethra.* The canal was dilated to permit its escape, but in vain, as the calculus could not be brought farther forward than the membranous part. Attempts to seize it with forceps proved equally unsuccessful. An incision was therefore made in the *perineum* on a grooved staff, so as to open the canal a little anterior to the prostate. Two calculi the size of small beans, and of a very irregular figure, were then readily extracted. A sound being passed, occasioned a grating sensation in the prostate; and on examination with the finger a calculus was felt lying in a pouch of the left lobe of the gland. Dilatation having been effected with a bistoury, first one and then a second concretion was removed. The sound was now passed, and again grated on a rough surface, which led to a careful examination of the right lobe. A calculus, felt through a small opening, was, after requisite dilatation by the bistoury, removed with the forceps. The wound was perfectly healed at the end of ten days. The three last-mentioned concretions were extremely rough, and appeared to be formed of crystallized triple phosphate of magnesia and ammonia. They were nearly of the same size as the two first extracted.

Hæmatocele.—James Macleod, aged 48, from Peebles, entered the Hospital on the 3d of March, with the view of being radically cured of a very large hydrocele. The testicle had been bruised twenty-eight years previously, but occasioned him no particular uneasiness. Two years ago the collection of fluid formed, and had since been evacuated twice. Its colour was darker, and it returned more rapidly on the latter of these occasions than the former. There was no translucency.

The swelling was tapped, and sixteen ounces of dark-brown fluid drawn off. The testicle was found to be much enlarged, irregular, and unequal in its consistence. The tumour had very nearly regained its former size in the course of a day or two; but the patient being averse to suffer a more severe operation than he had contemplated, left the house and went home. He returned on the 17th of April, willing to submit to anything that might be judged proper. The *tunica vaginalis*, with the testicle and its other contents, was removed on the 23d, and, with the exception of a troublesome tendency to diarrhœa, he made a good recovery.

The spermatic artery was carefully injected with size, to discover the source of the bleeding, which had occasioned the disease. On dissection, the minutest branches were found to be filled, so that there was hardly a point throughout the whole extent of the membrane where they did not appear, but no extravasation had taken place internally, whence it was concluded that the bloody effusion had proceeded from the capillaries. The testicle was degenerated into cysts, the lining membranes of which were exceedingly vascular.

Medullary Sarcoma of the Testicle.—A testicle was removed in the case of a private patient which deserves to be noticed. The patient was 24 years of age, and had suffered three or four years from the disease. It had increased latterly with great rapidity, and at length constituted a large irregularly shaped mass, nearly the size of a person's head. There was no perceptible affection of the glands, and though the patient was weak, and his pulse very quick, there seemed to be no doubt as to the propriety of removal. The tumour weighed four pounds and a-half, and a section of it showed a medullary structure unusually soft and bloody. The wound healed, but the patient did not gain strength; his pulse continued very quick; a tumour appeared over his breast; and he finally sunk under his sufferings, about two months after the operation.

Accidents and Disease of the Bones and Joints.

Lateral Dislocation of Elbow-Joint.—The patient was a boy who fell on his side from the back of an ass four days previous to the time of his application at the Hospital, which was the 7th of May. The arm was half-bent and pronated. It was preternaturally moveable transversely outwards. The internal tuberosity of the humerus had been detached, but was still unusually prominent; while the external one could not be felt, being concealed by the head of the radius which projected beyond it. Extension and counter-extension, followed by flexion of the fore-arm, and attended with pressure on the head of the radius, readily effected the reduction; and a figure of 8 bandage was then applied to prevent displacement. The patient suffered no farther trouble from the accident, and regained the perfect use of his arm.

Fracture of the Neck of the Thigh Bone.—An old woman, aged 72, last December, fell upon her side and sustained a fracture within the capsule of the hip-joint. She was treated by means of the long splint, and lay in bed eleven weeks. She is now able to walk without the assistance of a staff, and with hardly any perceptible inequality of the limbs. Other cases of the same kind have terminated no less satisfactorily; and while the question as to the possibility of osseous union within the capsular ligament still remains undetermined, the important fact should be recollected, that, if the fracture be kept in proper position, such a degree of firmness will often, perhaps generally, be regained, whether by cartilaginous, ligamentous, or osseous junction is immaterial, as to render the limb serviceable, and prevent the distressing deformity and lameness which result from the practice of doing nothing for the patient's relief.

False Joint of the Fore-Arm.—William Paterson, aged 32, from Currie, about nine months ago, had both the bones of his left fore-arm broken at about their middle by the kick of a horse. He had the limb put up in splints, and continued without a single day's interruption his employment as a carrier. Union by bone has not taken place, and he applied for relief on this account. The arm could be bent with great freedom both forwards and backwards while the muscles were relaxed; but when he exerted them, the limb became firm enough for all ordinary purposes. He was even able to use the scythe and pitch-fork. In these circumstances he was advised against submitting to any operation for rendering the union complete.

Medullary Sarcoma of Bone.—Cases of this disease occurred in which the Frontal bone, Sacrum, Femur, and Ulna were affected; but the last of these alone was subjected to operation.

Archibald Macleod, aged 44, admitted on the 30th April, about seven years ago, had both bones of the left fore-arm broken, rather below their middle. He suffered no inconvenience from this injury after the fracture was united, until two or three years afterwards, when he began to feel deep-seated pain in the limb. Two years previous to the time of his applying at the Hospital, a swelling appeared on the outer side of the arm, and increased with accelerating rapidity, so that at length he observed a difference in its size almost daily. The tumour occupied the situation of the *ulna*, and extended from within an inch of the *olecranon*, half-way down to the wrist. It was of an oval figure, and semi-fluctuating consistence; but, nevertheless, felt tense on the surface, which was somewhat unequal. It was not discoloured, but the cutaneous veins were considerably enlarged. He complained of incessant pain, similar to toothach, which was particularly severe during the night. His appearance indicated no great disturbance of general health.

A bad opinion was formed of the case; but to satisfy the patient, cupping, blistering, and pressure, together with iodine ointment, were tried in succession. The two first of these means considerably diminished the pain for a time; and the last mentioned produced a remarkable effect on the bulk of the tumour, which was reduced an inch in circumference. These symptoms of amendment were very transitory; and at length the patient himself proposed amputation. The operation was performed by double flap, on the 18th of June; and he left the Hospital on the 11th of July. He continues quite well. On dissection, the tumour was found to consist of a mass precisely resembling one of the hemispheres of the brain in consistence and colour, and also somewhat in shape and size. It originated from a cavity in the substance of the *ulna*, the edge of which was a little expanded by the effusion of osseous matter.

Thickening and Ulceration of the Ulna in consequence of Injury.—Jane Paton, aged 20, from Inverkeithing, was admitted on the 8th of July, on account of a very formidable-looking sore of her left arm. The ulna was greatly thickened from within an inch of the wrist to the same distance from the elbow. The integuments were irregularly ulcerated at the centre of the swelling, and allowed a probe to pass into the substance of the bone, which felt as if disintegrated or granular. She stated, that eight months previously a cow had kicked her on the arm, since which the morbid appearances which have just been described gradually presented themselves, attended with pain almost constant, but more or less severe at different times. She seemed to be otherwise in good health, and declared that she had never taken mercury.

Ulceration of a dense bone, preceded by expansion of its texture, in consequence of irritation proceeding from external violence, generally proves extremely obstinate, and requires the treatment proper for caries ; but before employing any severe measures in this case it was thought right to try the effect of blistering, which is so useful in similar affections of dense bones resulting from constitutional disorder. Two large blisters were accordingly applied in succession, after which the sore was dressed with black wash. She improved slowly but steadily ; and was dismissed quite well on the 24th of August.

Excision of the Head of the Humerus.—James Somers, aged 36, presented himself at the Hospital on the 1st of June, on account of an abscess over the anterior part of the right deltoid. He had complained of pain in the joint for fifteen months previously, but could not assign any cause for the disease. The abscess was opened, and found to contain thin serous-looking fluid, with large masses of yellow substance, resembling coagulable lymph in the form in which it is effused from serous surfaces. The patient again applied on the 6th of August, when his appearance was so much altered that he could not have been readily recognized. He was thin, pale, and evidently exhausted by continued suffering. A sinus remained where the abscess had been opened, and a profuse thin discharge issued from it. The shoulder admitted of very little motion; when either moved or pressed, it was extremely painful; and, independently of such excitement, there was always an uneasy sensation in the limb shooting from the shoulder to the elbow and fingers, which during the night was so distressing as to deprive him almost entirely of sleep. The arm appeared longer than the other, but when measured, was found to be of the same length. A probe could be passed readily in various directions under the integuments, and also after some searching into the cavity of the joint, where it encountered a rough surface of the bone.

As it appeared that the removal of the diseased bone was the only measure adequate to afford the patient relief, and as he had no objection to suffer whatever was thought necessary, the operation of excision was performed on the 21st of August. An incision was made from the opening of the sinus downwards, nearly in the direction of the fibres of the deltoid muscle, about four inches and a-half long, and from the lower extremity of it another was carried upwards and backwards to the extent of two inches and a-half. The flap thus formed was dissected up so as to expose the joint, and then, as there was considerable bleeding from various small arteries, a few ligatures were applied. The capsular ligament was destroyed by the disease at its upper part, but remained entire at the sides, where it was next divided, together with the attachments of the scapular muscles. The head of the humerus being now turned out, was nearly cut through by the saw below the tuberosities, and completely detached by means of the cutting forceps. The cartilage was considerably eroded, and several carious excavations of the bone existed at the upper margin of the articular surface. The glenoid cavity of the scapula seemed perfectly sound, and therefore was not removed. * The edges of the wound were stitched together, and supported by a spica bandage.

The patient suffered hardly any constitutional disturbance from the operation. He sat up for several hours on the fourth day after it; and has now the prospect of being soon restored to health.

Moveable bodies in an enlarged Bursa.—A house-maid, aged 36, had a large swelling over the ligament of the patella. It was punctured, and found to contain, along with some fluid, no fewer than 3000 small white bodies, pretty similar in figure and size to coriander seeds. There can be no doubt that they proceeded from the effusion of lymph into the cavity, but it is difficult to imagine how they came to be all so exactly similar in shape and size.

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* In Christian Laing's case, (No. 88 of this Journal,) where the head of the humerus excised was completely excavated, the glenoid cavity did not require removal. Six years have now elapsed since the operation, and she continues perfectly well, using both arms so equally that it is difficult to perceive any difference between them.

ART. X.—*Sketch of the Geographical Distribution of Diseases.* By HENRY MARSHALL, Esq. Deputy-Inspector-General of Army Hospitals.

A CONSIDERABLE majority of the diseases found in our nosological systems exist in a greater or less degree over the inhabited surface of the globe. In some portions, however, of the earth's surface particular diseases occur much more frequently than in others; and there are great divisions of the globe where certain specific diseases never, or very rarely, appear. The causes of the prevalence of diseases in one part of the world, while they are not found in another, are frequently involved in great obscurity. Sometimes they seem to depend upon the influence of meteorological phenomena; but they frequently happen where no satisfactory origin can be assigned. Wherever mankind exists, there disease of one kind or another will occur, whatever care may be taken to obviate its causes. Death will have its victims; and probably from *one to five per cent.* die annually, not only among the savage races, and other classes who undergo great privations and want of skilful medical attendance, but also among those orders of society which are furnished with every comfort and luxury that wealth can procure. Mr Finlayson states, that, from the Carlisle tables, " there is very little, if any, heavier rate of mortality affecting the lower than that affecting the affluent classes, notwithstanding the many advantages that these can command;" and, with respect to " picked and chosen lives," he adds, " if a mere opinion, founded on what has yet appeared, be worth notice, it is this, that there is very little, if any, advantage at all in favour of selection."

The leading distinction between the diseases of temperate and intertropical climates appears to be, that, in the former the viscera of the head and thorax, or the nervous and respiratory systems, are chiefly affected, while in the latter the abdominal viscera, or the organs of assimilation, principally suffer. Fevers in warm climates seem chiefly to affect the stomach, as is seen in the black vomit of yellow fever. In cold climates the brain and spinal marrow are commonly principally implicated, while the stomach more rarely suffers. Tropical diseases differ also from those of temperate climates by their violence or great proportionate fatality, and the extreme rapidity of their progress.

Independently of the difference of latitude and the difference of temperature resulting therefrom, other causes more or less connected with the difference of longitude, modify the prevalence of diseases inasmuch as those which prevail in one hemisphere are often not of frequent occurrence in another, although in the same latitude.

My object in this sketch is to give a brief notice of those diseases and affections which are considered peculiar, or chiefly restricted to particular regions or spots of the earth's surface. For the sake of convenience, I will arrange them in alphabetical order. There are two leading objects which require to be kept in view.

1*st*, To point out in a general way the geographical distribution of each affection.

2*d*, To endeavour to ascertain in some measure the degree to which each affection prevails in a particular range of country. This object can often be but very imperfectly attained, in consequence of the want of specific information.

Should the following catalogue of diseases, which are alleged to be much more frequent in some parts of the world than in others, have any influence in exciting some person, who has better opportunities than I have for investigations of this kind, to examine the subject carefully, and to publish the result of his inquiries, my object shall have been attained. It is not my intention in this paper to attempt to account for the causes of diseases. I purpose chiefly to state simply where certain affections are remarkably prevalent, without reference to their occasional causes, or to their artificial multiplication.

1. *Albino Skin.*—Examples of a deficiency of the natural pigment of the skin, hair, and eyes, occur much more frequently among the inhabitants of intertropical climates than in temperate latitudes. Albinoes seem to be relatively more numerous in Africa than in Asia or America. The king of Ashantee collected nearly 100 white negroes. Dubois says, they are not uncommon in India; and I have seen a few in Ceylon; but they are not numerous in that island. It is remarkable that the few Albinoes which have been born in Europe have been generally males. Dr Mason Good states that they have been all of this sex; an assertion which is not, however, strictly correct.

When Albinoes are matched with blacks, the progeny is either white or black, not brown-coloured like a mulatto. A similar result takes place in this country. I am informed that an Albino male parent, who resides at ——— in the north of England, has a numerous family of children, some of which are pure Albinoes, while the others have the natural pigment of the skin, hair, and eyes, and resemble the mother. There are several Albino females in this gentleman's family.

In the oriental Archipelago, Albinoes are not rare among quadrupeds. Mr Finlayson informs us, in his account of the the Mission to Siam and Hue, that he saw several Albino elephants, buffaloes, and monkeys, in Siam.

2. *Barbiers.*—This disease is very generally confounded with *beriberi*, although the nature and progress of their symptoms are materially different. The former is a chronic, the latter is commonly an acute, disease. The leading symptoms of barbiers are, numbness, pain, and partial loss of power of the muscles of the inferior or superior extremities. Sometimes the muscles of the back become similarly affected. The progress of the disease is often protracted for several months before either recovery or death supervenes. Horses and dogs are liable to barbiers, from the effects of which they seldom if ever recover.

Barbiers occurs, according to Bontius, in Java; and the translator of his work, with Dr Lind, states, that it is violent and frequent on the Malabar coast. I have seen it in the island of Ceylon; but except in the places enumerated, I am not aware of its having been observed and described.

3. *Beriberi.*—The leading symptoms of this disease are numbness, *œdema*, sometimes loss of power of the lower extremities, general *anasarca*, *dyspnœa*, great uneasiness at the *precordia*, spasms, feeble pulse, livid countenance, and coldness of the extremities. The progress of the symptoms is commonly rapid. The female sex are not liable to beriberi.

Beriberi was very prevalent among the various classes of troops employed in Ceylon about the end of the last and commencement of the present century. The troops employed in the Kandyan country, during the year 1803, suffered much by it. Since that period this disease has been comparatively little known in Ceylon. Lascars, or Indian seamen, are occasionally liable to beriberi. It sometimes also affects the inhabitants of the peninsula of India, particularly the Malabar coast, and that part of the Coromandel coast which extends from Madras to Ganjam, but it is seldom observed above forty miles inland. I am not aware that beriberi has been observed in any other parts of the world. The pathognomic symptoms of barbiers and beriberi have been mentioned for the purpose of preventing them from being confounded.

4. *Bronchocele; Goitre.*—This affection is common among the inhabitants of the vallies of the Alps, Apennines, and Pyrenees. In Savoy, Switzerland, the Tyrol, and Carinthia, there are villages in which the greater number of the inhabitants, more particularly of the female population, have some swelling of the neck. About two-thirds of the inmates of the Lunatic Asylum at Milan, when it was visited lately by a friend, suffered under this affection. Professor Barton learned that bronchoceles are

not uncommon among the North American Indians. Bronchocele is said to be especially frequent in Lower Canada, and, according to Bonpland, it is endemic in New Grenada. This disease occurs frequently in Derbyshire, and occasionally in Norfolk: in Scotland it is seldom seen, except in Perthshire. Sporadic cases of bronchocele occur perhaps all over the world; but, except in the places mentioned, I am not aware that it is endemic to any considerable extent.

5. *Bulimia.*—In the frozen regions of the north, the appetite for food and the power of digestion are commonly excessive. Captain Cochran, in his account of a Journey through Russia and Siberian Tartary, gives some remarkable illustrations of this fact. Admiral Saritchef states, that a Yakuti informed him " one of their men was accustomed to consume at home, in the space of a day or twenty-four hours, the hind quarter of a large ox, twenty pounds of fat, and a proportionate quantity of melted butter for his drink. The appearance of the man not justifying the assertion, the Admiral had a mind to try his gormandizing powers, and for this purpose he had a thick porridge of rice boiled down with three pounds of butter, weighing together twenty-eight pounds; and although the glutton had already breakfasted, yet did he sit down to it with the greatest eagerness, and consume the whole without stirring from the spot." Captain Cochran says, " I have repeatedly seen a Yakut, or a Tongouse, devour forty pounds of meat in a day;" and " I have seen three of these gluttons consume a rein-deer at one meal." He adds, " I myself have finished a whole fish in a frozen state, which might have weighed two or three pounds, and, with black biscuit and a glass of rye brandy, have defied either nature or art to prepare a better meal."

6. *Cacabay.*—This is the negro name of a disease which Dr Hunter informs us affects negroes in Jamaica, but not persons born in Europe. Hillary asserts that cacabay (leprosy of the joints) affects both negroes and creole whites in Barbadoes. He says that from six to twelve negroes are sometimes suffering from this disease upon one estate. Cacabay occurs frequently among the indigenous inhabitants of Ceylon and the peninsula of India. Many of the mendicants at Colombo, Amblamgoddy, and Point de Galle, in Ceylon, are disabled by this disease.

Cacabay is frequently confounded with tubercular leprosy, although they are very different affections. In cacabay the disease commences by the skin of the extremities becoming speckled, followed by diminished sensibility and enlargement of the toes or fingers. The flexor muscles of the wrist and fingers become contracted, and the patient soon loses the power of extending his hands. The flexor muscles of the feet become similarly affected, when the unhappy victim is obliged to walk upon his heels. Ulcerations at the joints next follow, which are succeeded by a separation of some of the phalanges of the fingers or toes. The ulcers cicatrize, but eventually other joints become affected, followed by a successive separation of some of the remaining bones. Cacabay often makes great progress before the general health appears to suffer. Indeed it is not uncommon in this distressing complaint to witness great mutilation of the extremities, accompanied with a plump healthy frame. Cacabay has not, I believe, been observed in a temperate climate.

7. *Calculus Vesicæ.*—The geographical distribution of this disease seems to be in a great measure limited to the temperate latitudes. But even in temperate climates it is much more frequent in one place than in another a very short way distant. The relative proportion of cases of stone to patients admitted on account of other diseases in the following hospitals evince considerable variety.

Norwich, 1 case in 35 patients; La Charité (Paris), 1 in 238; Guy's Hospital, 1 in 300; Glasgow Infirmary, 1 in 344. (1830.) Hopital Des Enfans Malades (Paris), 1 in 500; St Thomas's Hospital, 1 in 528; Infirmary, Edinburgh, 1 in 1000; Civil Hospital Establishment, Gibraltar, 1 in 1481. (Period 10 years.)

Dr Dancer states that calculus never occurs in Jamaica. Dr Scott makes a similar statement in regard to Bombay. He says that during his long residence there he never met with a case. Dr Ainslie, who was for more than thirty years on the peninsula of India, says, "I have had occasion to attend both Hindoos and Musselmanns suffering for gravel or stone; but I cannot say that they are maladies of common occurrence in Hindostan; on the contrary, they are very rare; and as for confirmed stone in the European habit, I never knew a case of it."

8. *Cancer.*—This disease is in a great measure confined to the temperate latitudes. During a period of ten years, 16,283 patients were treated by the medical officer attached to the Civil Hospital, Gibraltar; and of this number eight are returned under the head of cancer. This is presumed to be a much smaller relative proportion of the disease than occurs in higher latitudes. In Jamaica Dr Dancer states, that "cancer seldom occurs, and it is peculiar to *water drinkers.*" I recollect of having seen one case, and one only, of open cancer in Ceylon, although I had extensive opportunities of observing the natives under disease.

9. *Consumption, Pectoral Disease.*—Thoracic disorganization is a frequent or prevailing disease from the 30th degree of north latitude to Nova Zembla. In so far as information has

been received, it may be presumed that pectoral disease is pretty uniformly prevalent in the respective parallels of latitude within the above range. The mean annual mortality of all ages in Great Britain has been found, by the census of 1821, to be about 1 in 58; but in round numbers I shall assume that it is 1 in 50, or 2 per cent. Now, according to the London bills of mortality since 1808, it appears that one-fourth, or 25 per cent. of the deaths, is occasioned by consumption. If the proportion of consumption to general mortality be admitted to be as 1 to 4, and if it be granted that the annual mortality is to the population as 1 to 50, while by the census of 1821 it is ascertained that the inhabitants of Great Britain amount to 14,391,631, it will be found that the annual number of victims to consumption in this island amounts to 71,958. Perhaps this estimate is rather below than above the real number. Sir James M'Grigor informs us, that "in England this disease (consumption) is as frequent in the army as it is in civil life under ordinary circumstances; and when no epidemic or contagious diseases prevailed, I found the deaths from consumption to amount to one-fifth, one-fourth, and in some regiments even as high as one-half of the mortality." According to an abstract of the returns of the sick of the troops employed in Scotland from 1816 to 1822, the deaths amounted to 230, and of this number 107 died from diseases of the thorax, being equal to 46.5 per cent. of the general mortality.

At New York consumption seems to engross one-sixth and sometimes a fifth of all the deaths. As the mortality of the inhabitants of New York is 1 in 40, one-fifth of the general mortality by consumption is exactly the same ratio of deaths in the population by this disease as in London, namely, one-fourth. In Philadelphia, which is 16° south of Edinburgh, the relative number of deaths by phthisis is said to be as high as in Great Britain. I am not aware of the existence of any documents by which we can estimate the degree of the prevalence of consumption in British America.

The annual mortality in France is about 1 in 40, and the relative proportion of deaths by consumption to the general mortality is 23 per cent., or nearly one-fourth. The frequency of consumption among the natives of Madeira, Naples, and Sicily, is remarked by various authors; but I do not know that any comparative statements have been published on the subject. The general mortality of the garrison of Gibraltar during the eight years ending 20th December 1822 amounted to 379; of this number 107 or 28.4 per cent. of the whole mortality, died of diseases of the chest, and during the above period 227 men were discharged from the service in consequence of "chronic affection of the chest, under the head pulmonic."

According to Krafft, pleurisies destroy one-fourth of the whole population of Petersburgh, fevers one-third, and consumption one-sixth, being five-sevenths of all the deaths. We have no data to enable us to estimate to what extent consumption adds to the general mortality of the inhabitants of Tartary or China.

Within the tropics Europeans suffer much less by consumption than in temperate latitudes. By Dr Strachan's annual returns of the troops employed in the Bombay Presidency for the year 1826, it appears that the mortality by "pulmonary consumption" amounted to 2 per cent. of the general mortality; and, according to Dr Adolphus's annual returns of the troops serving in the Island of Jamaica, from the years 1823 to 1825, both inclusive, the deaths by "pulmonic disease" amounted to 4 per cent. of the total mortality.

Dr Dancer, physician to the public hospital at Kingston, published a report of this establishment, from the 1st November 1807 to the 31st October 1808, by which it appears that the ratio of the mortality by thoracic diseases, including "asthma," "pneumonia," and "phthisis," amounted to 4.5 per cent. of the general mortality.

To what extent consumption exists among the aborigines of South America we are uninformed. On the continent of Africa it seems to be a rare disease. Dr Winterbottom, who was physician to the colony of Sierra Leone, for a number of years, says in regard to consumption, "as an idiopathic disease, I do not recollect to have seen a single case."

The indigenous inhabitants of the peninsula of India and Ceylon are but little liable to consumption. It occurs, however, more frequently among the Malay than among the Gentoo or the Singhalese inhabitants of Ceylon.

Although the natives of Africa are, according to Dr Winterbottom, remarkably free from consumption in their own country, they are very liable to it in other climates. Even in Ceylon, where the mean temperature of the coast is 81°—82° Fahr. four-fifths if not nine-tenths of the mortality of Africans is occasioned by pectoral disease, and chiefly by tubercular consumption. The general mortality of Africans out of their own country has therefore an intimate relation with the ratio of the prevalence of consumption among this class of people in particular portions of the world. During the period Ceylon was under the sway of the Portuguese government, there was a constant importation of African slaves, of which not a trace remains. Mr Bartolocci, in his work upon the commerce of Ceylon, says, "it is a very remarkable fact, that of about 9000 Caffries, at different times imported into Ceylon by the Dutch government, and formed into regiments, no descendants are remaining, at least they are in no way to be distinguished among the present inhabitants." In 1803, the British government embodied a regiment of Africans, which were chiefly procured at Mozambique, and in 1810, a similar corps was raised. The number of men required to form and recruit these corps must have amounted to from 3000 to 4000. In December 1820, only 440 individuals, which comprehended the remains of both corps, and their male progeny, were in existence.

In the West Indies, also, Africans are very liable to diseases of the chest; but chiefly to tubercular consumption, and to an effusion of serum into the pleura, the result of inflammation of the lungs. It is the latter affection which has been denominated by authors *Anasarca Americana*, and *Cachexia Africana*. The average annual mortality among the African corps employed on the windward and leeward islands, and Jamaica, during a period of 19 years, or from 1810 to 1828, inclusive, was 5.5 per cent. This is very nearly four times the ratio of the mortality of the troops employed in Great Britain and Ireland, which is 1.5 per cent.

A similar ratio of mortality seems to occur among Africans in temperate climates; for in New York and Philadelphia, the annual average amount is 5.2. per cent. whereas it is 2.5. per cent. among the whites.

Except at Bourbon, I am not acquainted with any account of the average annual mortality which occurs among free blacks. In that island, according to Mr Thomas, it is annually 1.5. per cent. Among the slave population, the deaths exceed the births on an average of 3 per cent.

An interesting question may here be asked, namely, what is the relative proportion of the inhabitants of temperate climates, who are commonly suffering under consumption? Accurate and comprehensive returns from hospitals and dispensaries might furnish materials from which to deduce the relative, but not the absolute, prevalence of this disease. It would be impossible to estimate the average sickness in a whole community. This may, however, be easily effected in certain classes of people, such as friendly societies, but particularly in the army, where accurate returns are preserved. For example, it may be deduced from the following returns, that the average proportion of men in hospitals belonging to the army in this country is about from 4 to 5 per cent.

Return of the mean annual strength of the troops employed in Ireland, from the 31st December 1796, till the 1st January 1829, the proportion of sick per cent. the average number of deaths, and the proportion of deaths to the mean strength.

Number of years.	Mean strength.	Mean proportion of sick per cent.	Mean annual number of deaths.	Mean ratio of deaths per cent.
32	36,921	5.1	576	1.5

The following is a similar return of the troops employed in Scotland from 1816 to 1822, inclusive.

Number of years.	Mean strength.	Proportion of sick per cent.	Number of deaths.	Ratio of deaths per cent.
7	2975	3.6	33	1.1

From the official returns at the Adjutant-General's office, it appears that in 24 monthly musters of different corps in this country, forming an aggregate of 313,695, there were 14,049 on the sick list, and disqualified for duty, being at the rate of 4.4 per cent.

Taking a very general view of the subject, it may be assumed that 2 per cent. of the army serving in this country are unfit for duty, on account of pectoral affections, and that one-half per cent. die annually in consequence of this class of diseases.

10. *Cholera.*—This disease in a severe form seems to have been epidemic in Europe during the 14th century. In 1817 it became epidemic in Bengal, and since that period it has appeared in a southern direction, in the island of Timor, New Holland, and the Mauritius. Eastward, it has seemed to travel as far as Kuku Chaton, a town in China. To the north it has extended to the frontiers of Siberia, and in a north-western direction it has spread over great part of Europe; and lately it has reached the eastern shores of North America, where it is now raging.

11. *Convulsions.—Leaping ague* is the colloquial denomination of a convulsive disease which is nearly peculiar to a few of the parishes of Forfarshire in Scotland. The disease has not lately been so frequent as formerly, but cases still occasionally occur, particularly in the parish of Kirrymuir.

A similar affection was epidemic among the inhabitants of the Orkney and Shetland Islands about the year 1774. At one time leaping ague was so prevalent in a parish in the Orkneys, that from fifty to sixty persons were on sacramental occasions attacked with it in church. "*The extraordinary work at Cambuslang,*" which commenced in February 1742, was perhaps a kindred affection, "the subjects of it being strangely agitated by strong convulsions, fearful contortions, loud out-cryings, imaginary sights, visionary representations, great swoonings, foamings, fainting, &c."—*Vide* "*Faith no Fancy, or a Treatise on Mental Images,*" by the late Reverend Ralph Erskine, minister in Dunfermline.

12. *Deformities of the Body.*—The following varieties of this class of diseases or disabilities are not unfrequent in temperate

climates, more especially among the civilized communities of Europe. In India, and in tropical Africa and America, they are extremely rare, so much so that many a person has resided in one or other of these countries for several years without observing a single example of one of them.

Enormously large head; strabismus; hare-lip; disproportioned length of the superior or inferior extremities; hump-back; knock-kneed; bow legged; club feet; superfluous organs, as toes or fingers; diminutive organization in general, (dwarfs,) or the reverse, (giants.)

13. *Dysentery, Bowel Complaint.*—This may be considered a tropical disease; but it is much more prevalent within certain ranges of longitude than in others. In the West Indies it is the cause of comparatively only a small portion of the mortality; but in the peninsula of India and the oriental islands, it is perennially endemic among all classes of the inhabitants, both indigenous and imported, and carries off a large portion of those who die of general disease. Dysentery is often combined with inflammation and consequent abscess of the liver. In some stations in India it has been ascertained by dissection that the liver evinces traces of disease in one-half of those who seem to have died of bowel complaint. The following remarks, therefore, in regard to the prevalence of dysentery, will, to a certain extent, apply to *hepatitis*. Dysentery affects Europeans, Africans, Singhalese, Malays, Gentoos, and Musselmanns indiscriminately. The ratio of sick in European military hospitals in India commonly averages from ten to twelve per cent., and of this number one-half of the important cases generally suffer from dysentery. In many stations this affection is the cause of a moiety of the mortality. Sir George Ballingall, in the fifth appendix to his Practical Observations on the Diseases of India, has given a general statement of the sickness and mortality of the European troops at the principal stations under the Madras establishment, from 1st January 1807 to 31st October 1808, by which it appears that the number of deaths during the above period amounted to 1116, and in the following proportion of the several diseases:

Dysentery, .	575	=	51.5	per cent.
Fever, .	237	=	21.1	
Other diseases,	206	=	18.4	
Hepatitis, .	98	=	8.	
Loss, .			1.	
	1116		100	

Under the head "Other Diseases," are included 20 deaths on account of *ulcers*, 21 in consequence of *dropsy*, and 34 *on account of venereal !* A similar degree of mortality by dysentery took place in the Indo-Egyptian army, as will appear by the following statement of the number of deaths which occurred among the Europeans belonging to the Indian army in Egypt, from the time of embarkation to the return to India, and the relative proportion of deaths per cent. by particular diseases, to the general mortality:

Dysentery, .	148	=	47.8
Liver complaint, .	64	=	20.6
Diseases unknown, .	41	=	13.2
Plague, .	38	=	12.3
Fever, .	18	=	5.8
Diseases of the lungs,	4	=	1.2
Stroke of the sun, .	2	=	.6
Total deaths, .	315		100

The deaths which occur by this disease are more numerous than commonly appears on the returns; for in many instances, although men are admitted into hospital under the head fever, they finally sink from bowel complaint. With the view, therefore, of estimating the extent of the mortality occasioned by dysentery in India, I shall assume that on an average one-half of the absolute mortality is caused by it. In the prosecution of this investigation, the first question to be decided is, what is the ordinary ratio of mortality? I am not aware that there has been laid before the public a sufficiently extensive suite of returns of the absolute and relative mortality of the indigenous inhabitants of India by particular diseases, so as to convey a correct estimate of the degree of the prevalence of bowel complaint among that class of society. Recourse must therefore be had to returns of the troops employed in India, by which means we shall arrive at a close approximation of the truth. The following return is compiled from extensive data, and is intended to show the average ratio of mortality among European troops employed in our possessions in Asia.

Return of the ratio of mortality among eighteen regiments while they were serving in India, the island of Ceylon, or Java.

Regiments.	Number of years comprehended in the mean ratio of deaths.	Mean mortality per cent. per annum.
16th dragoons,	2	10.2
17th do. .	14	7.8
1st Royals, .	6	9.1
13th Regiment, .	7	19.5
19th do. .	24	7.4

30th Regiment.	7	6.
34th do	20	7.7
47th do	2	2.1
53d do.	6	6.4
59th do.	14	7.9
65th do.	22	6.8
69th do.	15	8.5
73d do.	3	28.1
78th do	19	11.3
83d do.	3	8.9
87th do.	12	11.6
89th do.	7	4.
Madras European Regt.	7	11.

General mean 9.6 per cent

The following returns corroborate the conclusions which have been drawn from the foregoing statement.

Abstract of Mr Annesley's general returns of the sick of the Madras army for the year 1821.

	Strength.	Number of deaths.	Deaths per cent of the whole strength.
Europeans,	9553	604	6.3
Natives,	82046	1929	2.3

If, from the whole number of deaths which took place among the natives, the number who died of cholera, which was epidemic in 1821, namely, 830, be deducted, we shall find that the ratio of mortality is exactly 1.4 per cent. or about the same proportion that occurs among European troops in Great Britain.

The ordinary annual ratio of mortality among the native inhabitants of the peninsula of India may be inferred from the following statement of the population and deaths in two districts for one year to be about 1.5 per cent.

	Population.	Deaths.	Ratio of deaths per cent.
Madura,	245,654	3933	1.595
Dindigul,	295,654	3438	1.163

(*Vide* Medical, Geographical, and Agricultural Report of a Committee appointed by the Madras Government, &c. &c. &c. of which Dr Ainslie was president.)

In estimating the extent of the prevalence of disease among troops, not only the ratio of sick and the ratio of mortality should be considered, but also the ratio of men disabled thereby, and rendered unfit for the service. For this purpose, I have subjoined an abstract of Dr Burke's annual numerical return of the European troops serving in the presidency of Bengal during the year 1826, and Dr Strachan's return of the troops serving in the presidency of Bombay for the same year.

Presidency.	Strength.	Deaths.	Ratio of deaths per cent.	Number invalided.	Ratio and loss by invaliding.
Bengal,	7976	774	9.7	379	5.2
Bombay,	2793	305	10.9	185	7.3
Mean,	5384	539	10.	282	5.8

Assuming that one-half of the mortality and invaliding which appear in the above return was occasioned by dysentery, either simple, or combined with liver disease, I conclude that the army serving in Bengal and Bombay loses annually, on account of dysentery, 5 per cent. by death, and nearly 3 per cent. by invaliding. The same data warrant us in inferring, that the annual loss by disease and disabilities is about 14 or 15 per cent. per annum.

With the view of showing the ratio of deaths and discharges in the Madras presidency, I have added an abstract of the mean annual loss of the European force in the presidency by deaths and discharges, for a period of seven years, or from 1815 to 1821, inclusive, from Mr Annesley's Sketches of the Diseases in India.

	Mean strength.	Mean deaths.	Ratio of deaths per cent.	Dicharges.	Ratio of discharges per cent.
Madras,	12592	794	6.3	514	4
	Total annual loss,		10.3		

It is worthy of remark, that the loss by invaliding in India, according to these returns, amounts to about one-half of the mortality, whereas the loss by invaliding among the troops in Gibraltar for a period of eight years was exactly three times that of the mortality, as will appear by the following statement.

Return of the mean strength of the troops employed in Gibraltar; the mean annual number of deaths, invalided, &c. from 21st December 1814, till the 20th December 1822.

Period. Years.	Mean strength.	Mean deaths.	Mean deaths per cent.	Mean number invalided.	Discharged per cent.
8	4000	47	1.1	148	3.3

14. *Elephant leg, Barbadoes leg, Galle leg, or Cochin leg.*—These terms are intended to denominate a specific disease which seems to be a result of some form of inflammation recurring periodically. A quantity of albuminous or sero-albuminous fluid is effused from the exhalents into the cellular tissue of a limb, which is not removed by adequate absorption. The limb or other parts of the body which are af-

fected becomes tumid, hard, and mis-shapen. Elephant leg is very rarely observed, except in the islands of Barbadoes and Ceylon, at Cochin on the Malabar coast, in the Polynesian isles, where it takes the name of *Yava*, in Abyssinia, Arabia, and in the provinces of Castile, and the Asturias in Spain. According to Dr Hendy, elephant leg is a disease of recent occurrence in Barbadoes. He says it was first described about the commencement of the eighteenth century. In that island the disease affects white, as well as the black, inhabitants; the latter class most frequently. All ages and both sexes are liable to it. No part of the body is exempted from becoming morbidly enlarged, but the scrotum and inferior extremities are much more frequently implicated than any other. Dr Hendy states, that horses are liable to elephant leg in Barbadoes, and that it had been reported to him, dogs, horned-cattle, and poultry, were sometimes affected with it.

In Ceylon the elephant or Galle leg is almost exclusively restricted to the indigenous inhabitants of eighty miles, or about one-ninth of the coast of the whole island. That part of the coast where the disease occurs has a south-west aspect, and extends from Colombo to Matura. Galle, or Point de Galle, whence the disease derives its Ceylon name, is situated on a part of this coast. Galle leg does not extend inland. Creoles, Moors, and the native Singhalese, are liable to this affection, but imported Europeans, Africans, Malays, and even the inhabitants of the peninsula of India, appear to be exempted from it. In Point de Galle, which is the principal village or garrison upon that part of the coast where the disease occurs, morbid enlargements are very frequent among all ages; perhaps one-third, if not one-half, of the susceptible inhabitants are more or less affected with them. The upper and lower extremities and the scrotum are the parts of the body most frequently enlarged. In general, one limb only is affected in an individual, although sometimes two or more are diseased. None of the brute creation are liable to morbid enlargements of this kind in Ceylon. I have known persons who suffered under the regular paroxysms of fever which accompany the progressive increase of elephant leg, who escaped these paroxysms by changing their place of residence, from Galle to the northern part of the island. The disease recurred, however, when the individuals in question returned to Point de Galle. Elephant leg occurs sporadically in Ireland, and sometimes in Caithness and Ross-shire in Scotland. According to Dr Graves, the enlargement is most frequent in the upper extremity in Ireland.

15. *Fever, Endemic, Yellow, or Remittent.*—Yellow fever prevails chiefly in tropical climates, where the mean temperature

of the atmosphere ranges from 70 to 80 or 81. It has never, I believe, been known to appear in temperate latitudes, unless the atmospheric heat has for some time been equal to the mean temperature within the tropics. When the fever has become epidemic in North America, the coast of Spain, or the Greek Archipelago, it has invariably disappeared on the approach of winter. Yellow fever seems frequently to be intimately connected with other less obvious, and indeed wholly unknown causes, the range of the disease being often limited to a confined space. Under similar circumstances, in regard to temperature, it is much more prevalent in certain degrees of longitude than in others; and it is more apt to spread among the inhabitants of crowded communities than where the population is less dense.

Endemic fever prevails to a much greater degree in the West than in the East Indies. In the West Indies, perhaps, from 70 to 90 per cent. of the mortality which occurs among Europeans is the result of fever. From a statement furnished by Dr Dancer of the patients admitted into the Public Hospital, Kingston, Jamaica, from the 1st of November 1807 to the 31st of October 1808, we learn that 266 died; and the following table is calculated to show the relative proportion of mortality by each disease:—

	Number.		Per cent.
Fever, - -	200	=	75.1
Pectoral diseases, -	12	=	4.5
Dysentery, - -	17	=	6.4
Thirteen other diseases,	14	=	5.2
Surgical diseases, -	23	=	8.6
Loss, - - -			.2
	—— 266		—— 100

The predominance of fever over every other fatal disease in the West Indies is strikingly illustrated by the following abstract of Dr Adolphus's return of the strength and mortality of the troops serving in Jamaica from the years 1823 to 1825, both years included.

Period years.	Mean Strength.	Mean deaths.	Ratio of deaths per cent. per an.
3	2677	371	13.9

Causes of death.	Number.	Relative proportion of deaths by each disease.
Fever, - -	341	90.1
Pulmonic diseases,	15	4.
Bowel complaint, -	12	3.2
Hepatitis, -	3	.8
Loss, - -		1.9
Total, -	——371	—— 100.

According to Dr Adolphus's quarterly return of the year 1825, including the months of October, November, and December, 300 deaths occurred during that period, of which 295 were in consequence of fever.

If we assume that 90 per cent. of the deaths which happen in the army in the West Indies is occasioned by fever, the following returns will enable us to estimate the mean loss among the troops by this disease.

By Bolingbroke's "Table of Deaths by Disease in the British Army serving in the West Indies," during a period of seven years, or from 1796 to 1802, inclusive, the mean annual ratio of mortality amounted to 22.3 per cent.

According to materials published by Dr Robert Jackson, it appears that the mean annual ratio of the mortality which took place among the troops serving in the windward and leeward islands, and the British colonies, or the coast of America, for a period of twelve years, or from 1803 to 1814 inclusive, was 12.6 per cent.

Return of the mean strength and mortality of the European troops employed in the West Indies and British colonies, America, from 1810 to 1828 inclusive, from data furnished by order of the Honourable the House of Commons.

	Period years.	Strength.	Deaths.		Ratio of deaths per cent. per an.
Windward and Leeward Island stations,	19	5768	657	=	11.3
Jamaica, -	19	2528	392	=	15.5

I have not been able to obtain an extensive series of returns of the mortality of the troops employed by the French government in the West Indies; but, according to the materials furnished by Monsieur Moreau de Jonnés, it appears that during the period included between the years 1802 and 1807, the mean annual mortality amounted to 30.2 per cent. of the whole strength. Subjoined is an abstract of the returns for these years.

Return of the mean annual strength of the French army employed in the islands of Martinique and Guadeloupe, the number of deaths, and proportion of deaths per cent. from the year 1802 to 1807 inclusive, compiled from returns published by M. Moreau de Jonnés.

Years.	Strength.	Deaths.	Proportion of deaths per cent.
1802	4010	2394	57.
1803	4686	1674	35.7
1804	3421	1005	29.3
1805	5169	2090	40.4
1806	5102	463	9.
1807	4959	622	12.8
Mean of 6 years,	4558	1374	30.2

16. *Female Precocity.*—Dr Mason Good asserts, that "menstruation has sometimes, under the influence of a tropical sun, shown itself as early as eight or nine years of age;" and he adds, "we have numerous and well-authenticated instances of pregnancy itself occurring at the early age of nine." It may be doubted whether the precocity here noticed was materially promoted by a tropical sun. In Ceylon the menses seldom appear before thirteen or fourteen years of age; and I do not recollect of hearing of an instance of pregnancy under fourteen. Persons who have resided in the oriental islands are enabled to speak with some confidence on this subject, because the first appearance of the menses among the females of the half-caste is frequently celebrated by a feast; so that, instead of considering this process of nature a delicate topic, they adopt various means to make it public. In some parts of India the event here alluded to is regularly promulgated in the public bazaar or market-place.

It is not unusual in India for children of eight or nine years of age to be betrothed; but we are not thereby warranted in supposing that the circumstance is to be attributed to a "fore march of nature." The betrothed children have no sexual intercourse until the female is a woman.

17. *Filaria Medinensis, Guinea Worm.*—This disease occurs chiefly in tropical climates. It has been observed in Africa, India, Arabia, the West Indies, and South America, and, according to some authors, it has occurred in the southern parts of Europe; but I am not aware that it has been recently noticed in this quarter of the world.

Guinea worm seems to be occasionally epidemic as well as endemic. So prevalent is it in some seasons in the west Indies, that 300 out of 500 negroes have been laid up with it at the same time in one of the *Grenadines;* and in Grenada, it often happens that 50 negoes out of 300 are in the sick list on account of it. During a voyage from Calcutta to Judda, in the Red Sea, Sir James M'Grigor informs us, that 199 cases of Guinea worm appeared out of 360 men of the 88th regiment; and several cases occurred among the ship's crew.

18. *Frambœsia, Yaws.*—This disease is said to be endemic on the west coast of Africa. Since our intercourse with Guinea, the disease has appeared in the West Indies, "where no habit, age, sex, or country, is proof against the contagion of yaws once in his lifetime."—(Dr Wright.) In healthy subjects the disorder will arrive at its height in about a month; but in persons that are sickly, not sooner than three or four months. Dr Adams thought he saw a case of yaws in Madeira, in a gentleman who had lately left the West Indies; but his conclusion respecting the diagnosis of the disease has been

doubted. The yaws seem never to have been observed in a temperate climate.

19. *Fungus Hæmatodes.*—A case of this disease has lately been observed in India; but, so far as I know, it is extremely rare in tropical climates.

20. *Gout* is chiefly a disease of temperate climates. It is rare in China and Arabia, which is not the case in Persia, where, among those who do not follow the rules of the Koran in regard to temperance, it is by no means uncommon. Dr Ainslie, who resided more than thirty years in India, says, " I do not think that I ever knew but one Hindoo who had a well-marked gout: the Mahometans are not so fortunate in this respect. Those Europeans who are subject to the attacks of it have, for the most part, long intervals betwixt the fits: and when they do come, they are generally slight." Dr Dancer makes a similar report in regard to Jamaica. " The gout," he says, " though it sometimes occurs, is not so severe as in northern countries."

21. *Hemeralopia*, *Day-Sight*, *Night Blindness*, *Tropical Nyctalopia*, are all names which characterize an affection of the eyes, by which vision is rendered more imperfect in moderate light, such as during moonlight, than in health. Night blindness not unfrequently affects troops upon arriving in a tropical climate. European sailors, when employed between the tropics, are very liable to it; so are Lascars (Indian seamen.) Sometimes as many as one in twenty British sailors are thereby rendered unfit for duty. The natives of India are occasionally liable to this affection. Hemeralopia is said to be frequent in the British West Indies and Poland. Poultry, and indeed almost all day birds, seem to be naturally hemeralopic.

22. *Hepatitis.*—This disease, which frequently terminates in abscess, is more prevalent in tropical than in temperate climates, especially in the peninsula of India and the oriental islands. Inflammation of the liver affects especially Europeans, but the indigenous inhabitants of these countries are by no means exempted from it. *Hepatitis* is often combined with inflammation and ulceration of the mucous membrane of the colon, which constitutes the dysentery of tropical climates. Of the numbers who die apparently of dysentery, the liver is, in all probability, obviously disorganized in about one-half. The influence of climate in changing the character of the diseases to which troops are liable in this country, and on board ship during a voyage to India, becomes soon evident after their arrival. I have seen tropical dysentery, combined with abscess of the liver, occur among troops in less than ten days after they had landed.

23. *Hernia umbilicalis.*—The natives of the central region

of Africa are almost universally liable, in a greater or less degree, to this affection. They are rarely if ever incapacitated for labour by it.

24. *Hydrophobia.*—This disease has been chiefly observed in Europe. It has, however, never been described as occurring beyond the Arctic Circle, and indeed, according to some authors, it is seldom, if ever heard of, at Archangel, Tobolsk, or in the country north of St Petersburgh. It has never been observed at Constantinople, Syria, or Egypt. Hillary states that he saw some cases of the disease in Barbadoes. It is, however, a disease which is extremely rare in the West Indies; I believe that in many of the Islands it has never been noticed. Valentin asserts that it is extremely rare in the warm regions of America, but common in the northern part of that continent. Rabies occurs in India but not often. According to Barrow the dogs in the vicinity of the Cape of Good Hope very rarely go mad.

25. *Hydrocele.*—This disease is certainly more frequent in tropical climates than in temperate latitudes.

26. *Influenza, Influence; Catarrhus Epidemicus.*—This disease has appeared as an epidemic in Europe about fourteen times during the last three centuries. We know nothing of the country whence influenza has at any time taken its rise. The epidemic of 1781 and 1782 was, however, supposed to have originated in China. The disease travelled through Asia into Europe, whence it crossed the Atlantic and arrived in America the following year. In this instance the epidemic travelled from east to west; it has frequently, however, seemed to proceed from north to south, and sometimes from west to east. Has influenza ever visited the Indian Archipelago, Africa, or South America?

27. *Insanity, Mental aberration.*—This affection occurs in all parts of the world, but it is particularly prevalent among the imported inhabitants of low latitudes where the temperature of the atmosphere is high. Pinel, Cox, and Dr Arnold, authors who have devoted much attention to the pathology of mental derangement, consider inordinate heat a powerfully exciting cause. Examples in proof of this opinion are of frequent occurrence.

28. *Intestinal Concretions.*—One variety of this class of calculi is peculiar to Scotland. Dr Wollaston discovered that it is chiefly composed of a portion of the grain of oats.—(*Vide* Dr Marcet's Essay on Calculous Diseases.)

29. *Itch, Scabies.*—This " is an almost universal complaint in Iceland, appearing indiscriminately among all classes of the inhabitants; no discredit is attached to it, nor does it seem that any means of cure are attempted." (Dr Holland.) A similar statement may be made in regard to the prevalence of itch among the inhabitants of the Malabar coast of the peninsula of

India. All over India and the oriental Archipelago the *scabies purulenta* is known by the term "*Malabar*," probably from the almost universality of the affection among the inhabitants of that coast. It is scarcely possible to conceive two classes of people, situated under equally different circumstances, as the inhabitants of Iceland and India; not only in food and temperature of the climate, but in habits so far as regards ablution, &c. &c.

According to Dr Schotte, the "itch is annually during the rainy season (at Senegal) endemic among the blacks, but particularly among the young ones."—"The disease yields to the external use of sulphur; but the blacks seldom take any thing for it, as it commonly disappears spontaneously after the rainy season is over." The inhabitants of Senegal, like the natives of tropical climates in general, "are constantly bathing and washing themselves."

30. *Kriebel Krankheit*, the *Raphania* of Linnæus, Vogel, Cullen, and Dr Good, and which the latter authors define a "spastic contraction of the joints with trembling and periodical pains." This disease is supposed to be restricted to the shores of the Baltic and a few other places on the continent of Europe. In 1595 and 1672, it appeared in Westphalia and the countries bordering on the Rhine; and about the year 1770, it became epidemic in the neighbourhood of Cologne and the Hartz. The leading symptoms of the epidemic of 1770 were paroxysms of insensibility, which sometimes lasted for a quarter of an hour, and occurred several times in a day, convulsions, headach, and during the intermission, the patient had a remarkable craving appetite. Gangrene happened in some cases.

31. *Tubercular Leprosy.*—The diagnosis of this disease is frequently not sufficiently attended to by authors, and by that means their account of the affection is often not specific or satisfactory. The tubercular leprosy of the Arabians occurs in Iceland; but Dr Holland, who is the chief authority on this subject, does not say how far it may be called a prevalent disease. "With the exception of three hospitals, in which a few incurable lepers receive gratuitous support," he tells us, that "no medical institution exists on the island." Pallas informs us that the inhabitants of the Crimea, Astrakan, and the Ural Mountains are liable to leprosy. This affection seems to be particularly prevalent in Madeira, and along the south coast of the Mediterranean. It would seem to be a very rare disease in Gibraltar, for, of 16,293 patients treated by the officers of the Civil Hospital, not one case of leprosy appears on the returns.

Leprosy occurs among the indigenous inhabitants of India and oriental islands; but it does not seem to be so frequent as *cacabay*, with which it is often confounded. Europeans are almost never affected with leprosy in India, but Creole whites are liable to it. In 1825, a soldier belonging to a regiment in India was admitted into Fort Pitt General Hospital, Chatham, on account of well marked tubercular leprosy. According to his own statement, the affection appeared during his passage from India. Perhaps this is the only case of leprosy which stands on the books of the Fort Pitt Hospital. Leprosy is extremely rare in Great Britain. Dr Bateman tells us, he never saw but two cases of it.

32. *Ophthalmia.*—This disease is said to be very common in the frozen regions of the north,—a circumstance which may depend rather upon reflected light than upon sublunary or terrestrial agents. Inflammation of the eyes is constantly endemic in Egypt, and the affection is not limited to men; for dogs, asses, camels, oxen, and horses, are liable to it. (Journal of Cairo, year viii.)

Ophthalmia is also said to be very prevalent on the Cordilleras and the mountains of Peru. (Le Blond.)

33. *Pellagra, Italian Leprosy.*—In this disease the skin is scaly; and, during the progress of the affection, vertigo and mental alienation supervene. Pellagra is endemic in the Milanese and Venetian territories, but beyond the boundaries of these countries it is scarcely ever seen.

34. *Plague.*—This disease appeared last in Scotland in 1645, in England as an epidemic in 1665, in France in 1720, in Moscow in 1771. Ever since it has been restricted to the islands and neighbourhood of the Mediterranean sea. Plague seems to be perennially endemic in a certain extent of country, the centre of which is the eastern boundary of the Mediterranean. The disease commonly begins in November in Egypt, and continues its ravages during the winter and spring. As the summer approaches its symptoms become milder; and on the 24th June the Turkish government announces to the public, by a discharge of cannon, that the epidemic has ceased. In Constantinople it prevails chiefly in summer, and, unlike the Egyptian plague, it ceases during winter.

35. *Plica Polonica.*—"Hairs vascularly thickened and matted by the secretion of a glutinous fluid." This disease is said to be endemic in Poland, Lithuania, Hungary, and Transylvania, from the source of the Vistula to the Carpathian Mountains. It occurs also in Prussia, Russia, Switzerland, and in some parts of the low countries.

36. *Pyebald skin.*—Pyebald skin is not an uncommon affection in India among the indigenous inhabitants, and among the black inhabitants of tropical climates in general. The absorption of the pigment is sometimes sudden, as during a pa-

roxysm of disease; commonly, however, it is progressive, and continues during life. A priest who lately belonged to one of the Buddhist temples in Ceylon had become completely white, except a small black spot near to the right eye. The white patches of pyebald skin have an albino whiteness, resembling the nose of a white horse.

37. *Puerperal Peritonitis.*—This disease is, I believe, chiefly confined to temperate latitudes. I do not know that it has been observed in a tropical climate.

38. *Radesyge, Northern Leprosy.*—This affection of the skin is nearly allied to the Arabian or tubercular leprosy. It has been chiefly observed in the Feroe Islands, Scandinavia, and the Duchy of Holstein.—(Edinburgh Medical and Surgical Journal, viii. 116.)

39. *Rickets, Cretinism.*—Rickets. This disease was first described by Glisson in the seventeenth century, when it was observed in the western counties of England, and it is therefore presumed that the word has a Saxon origin,—probably *hreac, ricq*, a heap or hump,—and hence the term humpbacked. Rickets is not much known except in Great Britain, Holland, the northern parts of Italy, and the north of France.

Cretinism, which is generally combined with goitre, seems to be a variety of rickets. It has been chiefly observed in the vallies of the Alps, the Pyrennees, and some of the mountainous parts of Germany and Spain. Sir George Staunton saw it in Chinese Tartary. Cretinism has been supposed to be a consequence of indigence and poverty. It is, however, remarkable that privations and impure air often exist to an extreme degree without producing the disease in other parts of the world. I have lately learned that Cretinism and goitre are prevalent in a small sheltered village on the coast of the Island of Arran.

40. *Trismus; Tetanus.*—Trismus is much more common among infants in hot climates than in temperate latitudes, more especially in the settlements of Demerara and Essequibo, where, according to Dr Hancock, one-half of the new-born children die of this disease. I am not, however, convinced that the tetanus which originates from wounds is more frequent in warm than in cold climates. At the capture of the Isle of France a number of men were wounded, but not a case of tetanus followed. When Java was captured, a great number of the troops were severely wounded, and only one case of tetanus took place. During the insurrection of the Kandyans in 1817 and 1818, only three cases of the disease occurred, although a great number were wounded. Tetanus is not very frequent on the peninsula of India, and it is said not to be known at the Cape of Good Hope.

Horses are very liable to traumatic tetanus in Ceylon, Java, and the peninsula of India; and many die from the disease, which occurs after the operation of *docking*.

41. *Varix.*—Varicose veins of the legs is very rare in India, except among the Palanquin-bearers, who are "fired" for the cure of the affection by the native doctors. Perhaps this mode of treatment may have given rise to the recent plan of employing caustic.

42. *Worms* (intestinal.) The *long round worm (Ascaris lumbricoides)* is much more frequent among the inhabitants of India than those of temperate climates. Europeans and Africans are likewise very liable to worms in India. I have seen an African who in one day passed 40 worms, and 200 in a week. Purgatives frequently expel worms where their existence had not been suspected. Worms are said to be frequent among Africans in the West Indies. When a body is inspected within ten or eleven hours after death the worms are generally found alive. The *tape worm* is occasionally met with in India, but not frequently. One variety of this worm, the *Tænia Solium*, is common in Italy, and, according to report, in Egypt also. The *Tænia lata* is very frequent in France, Switzerland, and Poland, probably much more so than in any other part of the world.

In this article the term Disease has been employed in a very widely extended sense, for which I hope to be excused.

I am well aware that this is a very imperfect sketch of the geographical distribution of diseases; a circumstance which may in no small degree be attributed to the deficiency of available materials. Were an abstract of the "valuable records," now in the public offices, regarding the health concerns of the troops employed in the different stations under the British government, published, so as to render the facts accessible to the medical profession at large, and an abstract of the subsequent reports made public at regular intervals, a body of information would soon be collected which would afford excellent data to illustrate this highly interesting and useful branch of medical science. When military returns are compiled with care and accuracy, the information they convey is more correct and satisfactory than that obtained from any other source.

ART. XI.—*Case of Gunshot Wound, in which a Musket-ball, after fracturing the Arm bone, penetrated the Abdomen, and afterwards perforated the Intestines, and was discharged by Stool.* By THOMAS SHORTT, M. D. F. R. S. E. Physician to the Royal Infirmary of Edinburgh.

DURING the siege of Genoa in 1814, an officer was wounded by a musket-ball, which fractured the right fore-arm, and afterwards penetrated the cavity of the abdomen, immediately above Poupart's ligament.

He was removed from the field to a vessel that lay near for the reception of the wounded, and there examined; but, notwithstanding a minute search, the ball was not to be found. In the evening the vessel sailed for Leghorn, where hospital accommodation had been provided, as being the nearest point of security; and during the passage, as well as during a residence there of some weeks, he was repeatedly attacked with spasms and very acute pain in the lower part of the abdomen, which, however, invariably gave way to bleeding, purging, the warm-bath, and local fomentations.

On consolidating the sick of the army after having gained possession of the town of Genoa, he was brought from Leghorn and placed under my care in the General Hospital of *St Francesco de Carignano.* At this period the wounds bore a healthy appearance; and although that of the groin occasionally exhibited symptoms of irritation, accompanied with returns of spasmodic pains, yet it continued daily to diminish in size, and the discharge became considerably lessened. The general health of the patient at this time was also improved; he slept well, and relished his food; but there was throughout the case an unusual torpidity of the bowels that rendered the exhibition of purgatives, and often of the most drastic kind, absolutely necessary.

About three months after the wound had been received, these promising symptoms, however, disappeared. The patient became restless, lost his appetite, and had evening accessions of fever, which in a short time became of a confirmed hectic nature; and in this state he continued nearly a month. One morning, when the bowels were unusually costive, I ordered a strong purgative, which brought away the ball so anxiously searched for, together with a quantity of purulent matter; and for several days there was evidently a communication between the external wound in the groin and the intestines, as the air generated escaped freely through the wound. From this period, however, the patient did not experience a bad symptom, but continued daily to improve in health, and was discharged cured in a month; and I heard from him several years after, that he had never experienced the slightest inconvenience from the wounded intestine.

The wounds were inflicted by a French soldier standing on the side of a hill above the individual wounded. The ball, it would appear, had not at first penetrated the intestine, but merely entered the abdomen obliquely; and as the patient was confined to bed, it had worked its way downwards, and eventually liberated itself by perforating the rectum.

ART. XII.—*Further Observations on the Worms of the Porpoise.* By DAVID CRAIGIE, M. D. &c.

IN writing the foregoing account of the worms found in the lungs and *bronchi* of the porpoise, though I had examined at least twenty specimens of the animal, all of them presented the extremity in the windpipe, as represented in Fig. 5, and the coiled up extremity in the bronchial vesicles uniformly rounded and obtuse. Since the foregoing account was written, I found two specimens in which the upper extremity, or that in the trachea, terminated differently, and which I at first took for imperfect or injured animals. One of these I showed to Dr Sharpey, who happened to call on me on Wednesday the 29th, and who was thereby induced to inquire, whether, in the case alluded to in the possession of Dr Allen Thomson, there was any other form of this extremity. Dr Sharpey found that in a few instances the upper extremity assumes a shape slightly different. In consequence of this information, I undid the preparation, and after some search found two specimens which corresponded in the appearance of the upper extremity with the two regarded as imperfect. In these the upper extremity terminated in two extremely minute points like horns, with a semilunar curvature between them, and which, when the animal is viewed laterally, appear like a single pointed extremity. This extremity, which may be denominated the *dikeratoid*, is much smaller and more flattened on the anterior and posterior surface, and, consequently, greatly more difficult to examine than the other; and about two hairs-breadth behind, it undergoes a contraction, and presents a neck. This peculiar shape Dr Sharpey is inclined to regard as a sexual distinction; and it is probable, that, as the animals to which it belongs are smaller than those with the incurvated extremity, and infinitely less numerous, they may be males. Should this conjecture be accurate, the extremity which I regarded at first as the head may be the tail; and the animals, instead of being androgynous, as I was led to think, must possess distinct sexual organs in different individuals. In other respects the general truth of the description remains unaffected. I am nevertheless unable, from the character now specified, to give the animal its exact entozoological name and place.

The reason of overlooking this form of the tracheal extremity is partly given already. The animals to which it belongs are greatly less numerous, and when I found the majority of the usual shape, I regarded the unusual as the effect of injury. It was requisite also to remove the best specimens by opening the tuberculoid cysts, and then extracting the animals; as by the windpipe, where the *dikeratoid* head was seen, they were invariably broken.

PART II.

CRITICAL ANALYSIS.

ART. I.—*Exposition de la Doctrine Medicale Homoeopathique, &c.—Exposition of the Homoiopathic Medical Doctrine; or Organon of the Art of Healing, by S. Hahnemann; with Fragments of the other Works of the Author, and a Homoiopathic Pharmacopœia, recently translated from the fourth Edition.* By A. J. L. JOURDAN, Member of the Academy of Medicine. Paris and London, 1832. 8vo.

OF all the uncertain parts of the conjectural art of healing, that denominated medical therapeutics is unquestionably the most fluctuating and unstable in its principles. Anatomy, sound and morbid, as branches of natural history, and depending chiefly on the faithful description of definite objects, is comparatively an exact science. Those departments of physiology which derive their facts from chemical analysis partake also of the certainty and precision of that science; and pharmacy is equally free from ambiguity and inaccuracy. Surgery, also, whether that which relates to the application of external remedies or mechanical means and manipulations, or operations regulated by anatomical position, has become one of the most certain and positive departments of the healing art; and even the principles of obstetrics may be reduced, with a few exceptions, to several definite rules of easy application. The moment, however, that the medical philosopher begins to inquire into internal diseases, and the means by which they are to be most safely and successfully combated and subdued, he finds himself involved in an immense labyrinth of contradictory facts, fluctuating opinions, irreconcileable hypotheses, and obscure, complicated, and often unintelligible and incongruous practices.

Physiology shows us how many different agents concur to the due and healthy performance of every function of the animal body; and pathology, if that science can yet be said to possess precision and stability, may tell us what slight and imperceptible derangements of function may give rise to serious and unmanageable disease, and how widely the causes of disease may vary at different times and in different organs. Were pathology, indeed, a certain science, therapeutics ought to partake of this certainty ; and whatever difficulty may be naturally experienced in the adaptation of remedies to disorders, much of that ought to be removed by an accurate knowledge of the nature of the disorders to be treated. But it is the peculiar character of medical pathology, or the doctrine of the nature and causes of disease, that, deriving its materials from many different sources, and several of these, from the nature of the subject, matter not of fact but of opinion, it has always communicated a considerable proportion of its uncertainty to the therapeutical systems which have at different periods prevailed among physicians. This ought not to excite any surprise at the present day, when, notwithstanding the zealous cultivation of pathology, so many impediments prevent the physician from coming at the exact knowledge of the primary and initial principles of morbid action. Pathology, it ought to be remembered, derives its materials partly from attentive observation of disease in the living body, and partly from inspection of its seat in the dead. In the latter department, however, all that we learn in a large proportion of cases is the effects of morbid action ; and unless we can from these effects, combined with such knowledge as observation and experiment or accidental circumstances furnish us regarding unhealthy action, draw just inferences as to the causes of the morbid changes, we become bewildered in an immense and trackless desert of obscure and contradictory facts.

In ancient times, while medicine was still in its infancy, we find that Hippocrates confined himself to the observation of the natural course of diseases uninterrupted by disturbing forces ; and proceeding on the principle that each disease had a certain course to run, and that the system possessed in itself some means of resisting the noxious effects of the morbific agent,—he endeavoured to discover in what manner these powers operated, and directed all his efforts to aid their influence. In the course of this species of observation, Hippocrates very soon discovered that in several species of disease, the powers of nature, as they were named, (αι δυναμεις) (*vires vitales*) were quite adequate to the task of carrying the patient through his disease, and that the interference of art was unnecessary or might be injurious ; while others required some means of co-operation, to enable the natural powers to act ; and that in a third class all means were useless and unavailing. On these grounds the practice of Hippocrates was principally of the expectant character ; and the great duty of the physician was to watch for favourable periods in the course of the disease, for the employment of a few remedies of definite powers and specific effects.

In the eye of philosophy and reason, this system of procedure is doubtless one of extreme value. It was more suited, however, to the infancy and youth of medicine than its adult age; and, however, necessary it might be among the hardy and unsophisticated inhabitants of the Cyclades, or on the sun-burnt shores of Asia Minor, to determine the natural history and tendencies of diseases, the mature experience of modern times shows that the physician must not in all cases leave the progress of disease in the hands of nature. This fact, indeed, which was early recognized by Asclepiades of Bithynia, who stigmatized the expectant system, as the medicine not of the living, but of the dead, was more or less extensively adopted by Themison, Celsus, Galen, and most of the succeeding physicians of the methodical school.

This system which, with some slight and inconsiderable modifications, was very generally adopted by European physicians at the revival of literature, was perhaps in some instances carried to an undue and excessive length. In proportion, however, as the writings of the Greek authors came to be more generally and accurately studied, physicians began to discover that the methodical system and the principles of Galen were not equally well calculated for all departments of the healing art; and the observations and method of Hippocrates, which have always, by their simplicity and beauty, procured numerous admirers among the intelligent and the genuine students of nature, found strenuous defenders in the Italian physicians, *Septala*, *Calvi*, *Mercurialis*, and the French *Duret*, *Houllier*, and *Baillou*. The appearance of the venereal disease at this conjuncture gave another turn to the minds of physicians and the theory of therapeutics; and while the ravages of this extraordinary pestilence enforced the necessity of using every means to resist its progress, as well as to watch its proper characters, the energetic chemical remedies introduced by Paracelsus and Van Helmont, completed the downfall of the methodized Galenical system.

The ingenious hypothesis of our countryman Willis, on the influence of the nervous system, was calculated to produce great and beneficial improvements in the department of therapeutics. But it was counteracted on the one hand, by the predominant influence of the chemical theory, which rapidly acquired a large majority of followers, and on the other, by the rising powers of the mathematical system, which soon began to attract numerous votaries from its success in explaining the laws and phenomena of the material world. From this source, the whole theory of the circulation and of its agents, of the hypothesis of derivation and revulsion, and acceleration of the blood after venesection, of morbid *lentor*, and spissitude, and even of the *error loci* derived all their importance; and while every remedial agent employed was administered in accordance with some hydro-dynamic, hydraulic or mechanical principle, those which could not be so administered were too often neglected and vilified. Such especially was the fate of the Peruvian bark, which, because its operation could be explained neither on chemical nor mechanical principles, was by a great majority of the educated physicians disregarded, or opposed with the most foolish and unreasonable rancour.

It was fortunate for medicine that the evils of this system were destined to be opposed by the example of Sydenham, who, almost by the unaided force of genius, introduced a method of observing the phenomena of disease not less carefully than that of Hippocrates, and a system of practice thereon founded, in which, with much judgment, he distinguished between the cases in which it was requisite merely to look on, and those in which it was requisite to oppose and control the processes going on in the living body. Proceeding on the principle that the phenomena of disease are quite as uniform and regular as those of healthy action, and that the first point in ascertaining the effects of remedies is to distinguish well the disease for which they are applied, the English physician laid the foundation of a system of medical practice, in which the great object was to adapt remedies to diseases on the grounds of accurate observation. By discarding a host of useless and inert medicines, and employing only a few energetic agents, by an accurate study not only of the character of diseases, but of epidemics as they occasionally occurred, and adapting his measures to their peculiarities, Sydenham presented a system of therapeutic principles, of which the leading character was that of allaying inordinate action by blood-letting and evacuants, soothing irritation by vegetable diluents and opiates, and restoring tone by means of bark. Without seeming to aim at such an object, indeed, Sydenham had laid the foundation of a system of practice of great and general utility.

Stahl and Boerhaave were differently circumstanced. Both more speculative than practical, and quite incapable of observing disease, without reflecting and reasoning on its nature and causes, and on the probable means of cure,—the former, regarding diseases as salutary efforts to preserve the frame from decay, most of these having a tendency to overload the vessels and thicken the blood, and retard its motion, directed all his curative means to co-operate with those natural efforts, and to anticipate natural, or promote artificial, evacuations. Boerhaave, on the other hand, more eclectic in his pathological and therapeutical principles, was more anxious to direct the attention of physicians to the remedial or noxious effects of material agents generally on the animal economy; and perhaps was in the right way of creating a more useful system of practice, had he not adopted, with a degree of implicit confidence approaching to servile admiration, the mechanical theories of relaxation and rigidity of the solids, obstruction of the vessels, the chemical changes of the fluids, and consistently enough proposed tonics and relaxants, means of derivation and revulsion, antacids and alkalines, medicines to blunt acrimony and correct putrefaction—agents which probably did not exist, even supposing the presence of the causes which demanded their administration. The system of Stahl was unquestionably the theory which connected and gave reason to the physiological and rational practice of Sydenham;—that of Boerhaave conciliated the opposite systems of the physiological, the chemical, and the mathematical physicians.

If mankind could always reason in an impartial and dispassionate manner, and take enlarged and comprehensive views of subjects, it might be inferred that the imperfect success which had hitherto attended all partial and exclusive theories of disease, and the operation of remedies, arose from inadequate and limited observation, and ought to impress the necessity of adopting a system of a more practical and natural character. If this was not positively produced, it was at least very much favoured by the new doctrines of Haller and Whytt, which had the good effect of showing physicians that the human frame was neither a chemical laboratory, a hydraulic machine, or a steam-engine, and was neither more nor less than an animal and animated body. Then it was that physicians began to inquire into the laws which regulated its various motions, to study the peculiarities of those laws, and to choose and administer their remedial agents accordingly. It is superfluous to say how much was done to give simplicity, efficiency, and order to therapeutics under Cullen and the pupils of his school. These invaluable improvements are recent, and must be in the recollection of all. Nor even must we overlook in the history of therapeutics the services of Brown, a wild and visionary speculatist, endowed with a warm and vivid fancy, who, seizing some truths, and mixing them with a very large proportion of fanciful speculation, was nevertheless instrumental in giving more just views than heretofore had been entertained, of the states of excitement and collapse, and of the influence of stimulants and sedatives.

Amidst the chaotic confusion and mutual disagreement of all these systems, there are still certain common features, exactly as there may be common points at which most of the founders have arrived, though by different routes. Thus we have seen Stahl and Sydenham would equally bleed and evacuate in fever or inflammation, though with different views; and while Boerhaave would order venesection for the purpose of diminishing obstruction and producing derivation and revulsion, Cullen did so to take off the spasm of the vessels, to abate inflammation, and allay the inflammatory diathesis in the system. If Stahl gave ipecacuan in dysentery it was to expel morbid matter; while Cullen did so to determine the peristaltic motion steadily and efficiently downwards, and to take off the spasm of the extreme vessels.

The general principle of most of these systems was to oppose and control one action by another, which was believed to be its opposite. Thus, supposing the physician to have to treat an inflammatory disease, which was understood to depend on excessive accumulation of blood in the vessels, on stagnation, on *lentor*, on spissitude, on *error loci*, then the physician was first to empty the vessels by venesection, to diminish its morbid thickness and consequent slowness of motion by diluents, and to counteract *error loci* by revellents and derivants. If a disease was understood to consist in spasm, then medicines having the effect of relaxing it, or antispasmodics, were believed to be requisite; and on this it is to be remarked, that considerable liberties were taken with medicines, in order to make them antispasmodics. Opium is one of the most powerful and direct antispasmodics according to some speculatists; and, in truth, it was found in many diseases, such as asthma, *pyrosis*, and colic, to be very effectual in this way. Blood-letting also, which was first eulogized as a mere antiphlogistic, was afterwards discovered to be a very powerful and general antispasmodic, in cases in which opium was quite unavailing. Accordingly, therefore, as each remedy or class of remedies was believed to be effectual against certain morbid actions, it was employed to cure them. Most of these systems agree, it may be said, in undertaking to control morbid action by substituting in its place some other or opposite action; and hence they are classed by Hahnemann under the general denomination of *allopathic* or *enantiopathic*.

It is manifest, if we look over the list of agents employed in the cure of disease, that most of them have the effect of inducing a temporary morbid state. Thus most emetics are irritants of the stomach and intestinal tube; all purgatives produce temporary irritation, *erythema*, or inflammation of the intestinal mucous membrane; diuretics are liable to produce irritation of the kidneys; and the narcotics have a peculiar power of operating on the vessels of the nervous system itself. It then becomes a question to what extent and in what manner these morbid actions artificially excited remove those which take place spontaneously, or whether spontaneous morbid actions have a tendency also to subside spontaneously. Physicians, says Hahnemann, who administer these remedies on the usual principles, operate not on the disease but on the economy itself; and the force of the disease is extinguished by merely impairing the powers of the system in an equal degree. It is exactly the case of two belligerent powers, who, without acting directly on the forces of each other, burn, ravage, and destroy, the surface of the unhappy country which is the innocent seat of war, and succeed only in annihilating the powers of each other, by cutting off their supplies and resources. This is particularly observed in chronic diseases, in which the effect of the treatment, Hahnemann contends, is more frequently to undermine the powers of the constitution, than to eradicate the disease under which it is labouring.

Every one conversant with the history of theories and systems, however, is aware, that of almost every phenomenon two or more explanations may be offered; and that in no science is this more easy than in medicine. Hence what Hahnemann terms *allopathic* or *enantiopathic*, is, in the language of other physicians, *antiphlogistic*, *derivative*, *revulsive*, or *counter-irritant*, according to the particular form and degree in which the remedial agent is employed. There is also, it must be remarked, a fallacious degree of sophistry veiled under the illustration employed above. Though it is doubtless the fact, that, in the treatment of disease, both acute and chronic, the effect of the remedies is to impair the vital powers, as well as to control the force of the disease, they do not impair the constitutional powers by any means in the same rate as the disease itself does; and the method of treatment in such circumstances may be regarded as a sort of race or contest between the remedies and the disease, in which it will depend much both on the promptitude and the judgment with which they are used, which is to have the mastery. The violence and obstinacy of morbid actions, it must be remarked, are in general in the ratio of the strength and power of the system itself, or at least of the vascular system, or some of its constituent elements; and hence, in controlling these morbid actions, the practitioner has rarely any other alternative save that of lowering the energy of the actions on which the energy of the diseased action depends, and diminishing the supply of those materials from which it derives its nutriment. The analogy, therefore, between the operations of two belligerent powers on a neutral territory does not hold good, since in the case supposed, one of these powers and the country, or, in other words, the diseased action and the living frame in which it takes place, are so identified that they cannot be separated. Let us not, however, reason against M. Hahnemann without allowing him to plead his own cause, and represent his own views in his own way.

M. Hahnemann follows Cullen and most other rational practitioners in believing that the ancient and the modern Hippocratic physicians exaggerated too much the unaided efforts of nature. These efforts are always difficult to be understood, very often precarious, and we know well that in many instances their tendency is not salutary; and in trusting to them, M. Hahnemann contends the allopathists pursue practice inert, injudicious, or injurious. When, for instance, in a chronic disorder, the vital force appears to alleviate any particular internal symptom by the substitution of some cutaneous disorder, the self-constituted physician of nature applies a blister or some counter-irritant, to derive from the skin a still greater quantity of fluid, and thus aid nature in removing from the system the morbific principle. In some instances, however, when the action of the remedy is too violent, the eruption of too old standing, and the patient irritable, the external factitious disorder augments remarkably, without proportionate alleviation of the primary spontaneous disorder, and the pains becoming more intense, deprive the patient of sleep, impair his strength, and may even occasion the appearance of an erysipelatous fever of bad character; or when the remedy acts more mildly on the local disease still recent, it produces a species of external homoiopathism on the local phenomena produced by nature for the relief of the internal disorder, renews the latter, and by thus suppressing the local symptom, may give rise to more disagreeable results on the important organs. In confirmation of these views, M. Hahnemann reminds us that the removal of a formidable ophthalmy by tonics and repellents has been followed by deafness, spasms of the stomach, epileptic convulsions, feelings of suffocation, apoplectic attacks, mental derangement, &c.

In cases of hemorrhage again, when the allopathist attempts to control the disease in imitation of nature, by an artificial discharge of blood, M. Hahnemann contends that he enfeebles the frame and augments the local congestion, without in the least abating the primary disorder. By attempting to control symptomatic night-sweats by sudorifics, and colliquative diarrhœa by mild laxatives, the allopathist in like manner aggravates the original disease. In short, M. Hahnemann contends, that, as the efforts of rude nature are imperfect, abortive, inadequate, and often pernicious, those of art which are attempted in imitation of them must be still more so.

Having thus discarded nature and all her servile imitators, M. Hahnemann erects in her place, as another divinity, *vital force*, which he represents to be incessantly acting, to act in a manner only conformable to the organization of our frame, without intelligence, reflection, or judgment, to regulate life or health in the most accurate manner, and to manifest her action not less distinctly in disease, but to be given, nevertheless, not for the purpose of practising medicine. This more noble and dignified duty, which requires observation, intelligence, and reflection, in order to direct, modify, and control by appropriate agents those inordinate actions to which automatic and instinctive nature is impelled by disease, it is reserved for the homoiopathic system of medicine to accomplish.

A considerable number of patients, treated according to the methods of the ancient school, escaped from their disorders, not in chronic cases, but in acute diseases less dangerous; but at this they arrived by a circuit so painful, and often so imperfectly, that M. Hahnemann contends they could not be said to be indebted to art for their cure. The acute diseases were in cases not urgent, occasionally controlled by blood-letting alone, or by the suppression of one of the leading symptoms by means of a palliative enantiopathic remedy, occasionally suspended by irritants and revellents applied to distant points from the affected organ, until the course of the natural revolution was finished; and in such a manner that the greater part of the necessary treatment had the effect of impairing the conservative power of life, which was then compelled to overcome both the natural acute disease, and the consequences of an improper mode of treatment; and in all dangerous cases it had to employ all its energy in restoring the functions to their natural order, which was effected slowly, with difficulty, and incompletely.

On the same grounds M. Hahnemann questions the propriety of exhibiting those medicines termed excitants and tonics, as these substances, he maintains, cannot impart either strength or tone to the system; and neither bark, nor any one of the manifold bitter remedies possess any of the tonic powers ascribed to them; and, in short, he maintains that these substances were more likely to induce new evils by the peculiar action to which they give rise. It is almost superfluous in the present day to talk of excitants and aphrodisiacs, so much extolled by the physicians of the Galenic and Paracelsian schools; for no one versed in physiology, we believe, now thinks of ascribing aphrodisiac virtues to ambergris, tincture of cantharides, or the hot and pungent peppers, which produce merely a local irritation, simulating one part only of the function, the general power of which they were erroneously supposed to augment.

Another argument which M. Hahnemann opposes to the principles of the allopathic school is the fact, that many of their remedies were directed against a mere symptom of the disease which they proposed to treat, or at most against some hypothetical and supposed cause, to which in their fancy they ascribed all the phenomena of the disease. Hence the absurd distinctions of antiphlogistics, antispasmodics, nervines, excitants, antiseptics, solvents, resolvents, derivatives, evacuants, &c. and the whole endless catalogue of medicines with which the pages of many pharmacopœias and dispensatories, especially in foreign countries, are still encumbered.

A third objection which M. Hahnemann brings against the practice of the allopathic physicians is certainly not necessarily connected with that system, and is not peculiar to it. It consists in the manner in which the remedy or remedies is exhibited, combined, he alleges, with numerous heterogeneous substances, several of which, for any thing that we know to the contrary, may have the effect of counteracting the operation of the chief ingredient, or of each other, so that the expected effect does not take place, and it may be that an effect quite the reverse may result. Add to this, that such a singular mixture may, and occasionally does, give the disease a new modification, which is not recognized amidst the tumult of symptoms, but becomes permanent if the treatment is continued, and thus induces a factitious disorder.

With such a system of therapeutics and pharmacy, it may be naturally asked, how comes it that diseases are or have been cured at all ? The question is partly answered by the observations already made regarding the imperfect cures obtained, and the energy with which the conservative power of the system has struggled against the alleged injurious effects ; and is more fully answered by the assertion afterwards advanced, that, in point of fact, many homoiopathic cures have been and are daily effected even by the allopathic physicians unconsciously. To prove this, M. Hahnemann brings forward a long train of facts, a few only of which we shall select as examples of the whole, premising at the same time in our own name, that many of these seem to be founded on authority not altogether above question.

The author of the Treatise on Epidemics, ascribed to Hippocrates, mentions an epidemic of cholera, which, after obstinately resisting all other remedies, he succeeded in curing by means of white hellebore, which, according to the testimony of Forest, Lebel, and Raimann, has been known to produce that disease. The sweating-sickness, which first appeared in 1485, and which was so fatal that it cut off at first 99 of 100 patients, could be subdued only by sudorifics. A diarrhœa, mentioned by Fischer to have lasted for years, threatening instant death, and against which all remedies were unavailing, was rapidly and permanently cured by a purgative administered by an empiric. The *agaricus muscarius*, to which Giorgi and others ascribe the shakings, convulsions, and epileptic attacks prevalent among the Kamtschatkadales, has been in the hands of Whistling successful against convulsions, and was found beneficial in epilepsy by J. C. Bernhardt. Millefoil, which was commended by F. Hoffmann in various hemorrhages,—which by Stahl, Buckwald, and Loeseke, was employed with benefit in excessive hemorrhoidal discharge, and hemoptysis, according to Quarin and the Breslau Reports, and in uterine hemorrhage, according to Haller,—owes these properties to a similar power of exciting hemorrhage. Ipecacuanha, in like manner, which is so useful in arresting bloody flux, has been known also by Murray, Scott, and Geoffroy, to cause hemorrhagy; and that its power of curing asthma is connected with a similar power of causing that disease, and especially spasmodic asthma, may be inferred from the testimony of the same authors. The meadow saffron, M. H. informs us, could not be useful in curing asthma, dyspnœa, and dropsy, if it did not possess a homoiopathic quality of inducing asthma and dyspnœa, as seen by Bergius, and diminishing the renal secretion, and rendering the urine scanty and red-coloured, as was seen by that author and Stoerck. Both jalap and senna are known to produce colic pains, with restlessness and agitation; and both these agents are often successfully employed to abate these complaints. The *scrophularia*, which has been found useful by Gataker and Cyrillo, in a species of dropsy, was observed by Rucker to cause general swelling of the body; and the elder-tree, which was found beneficial in the same disease by Boerhaave, Sydenham, and Radcliffe, is stated by Haller to have caused the same result by the mere application of the flowers to the external surface of the body.

It is in the narcotico-acrid agents, however, which operate on the nervous system and the functions of voluntary motion and sensation, that M. Hahnemann finds the most numerous and forcible illustrations of the fact, that diseases are cured by remedies which produce similar effects. Thus the poison-sumac *(Rhus toxicodendron)*, bitter-sweet (*Solanum dulcamara*,) thorn-apple *(Datura stramonium)*, *nux vomica*, leopard's bane *(Arnica montana)*, deadly nightshade *(Atropa belladonna)*, and henbane *(Hyoscyamus niger,)* all possess in different degrees and modifications the power of acting on the nervous system, *i. e.* the brain and spinal chord, of deranging the harmony of the intellectual and sensitive functions, disturbing the regularity of the muscular motions, and inducing convulsive, tetanic, or epileptic symptoms, occasionally with apoplectic or paralytic phenomena; and yet all these agents have been in different hands and in different cases useful in curing convulsive, epileptic, tetanic, and paralytic symptoms. The poison-sumach, was used by Alderson with benefit in paralytic cases; the bitter-sweet by De Haen in convulsions with delirium; thorn-apple in the same cases by Sidren and Wedenberg; *nux vomica* and *strychnia* in convulsions, palsy, and *anaisthesia* by many practitioners; and henbane and belladonna in mental derangement of various sorts. Even the alleged efficacy of belladonna, he maintains, in hydrophobia, is a sufficient proof of the truth of the theory; and if it has failed in declared forms of this disease, it is because it has not been possible to administer it in those minute doses which are requisite in the homoiopathic system to produce the effects similar to those of the disease.

Most practical physicians are well acquainted with the efficacy of the vinous liquors and opium in removing certain forms of delirium; yet how can these agents effect such objects, unless by producing an action which is at once similar to the natural one, and similar to the state of the nervous system for which they are exhibited. In how many instances of headach, lethargy, epilepsy, and similar affections, he asks, has not opium been found to be a most salutary remedy? The same camphor, which produces in health violent disturbance of the mental faculties, also relieves the delirium of slow fevers, and has been known, as in the case recorded by Cullen, to cure mania completely.

Another class of facts, of which M. Hahnemann makes considerable use, comprehends those derived from the operation of mercury and nitric acid on the animal economy. Both these agents have the effect of exciting excessively the action of the salivary glands, and inducing occasionally ulceration or erosion of the mouth and other parts covered by mucous membrane. Both these agents, also, are found to be very efficacious in removing the ulcerations induced by syphilis; and nitric acid itself has remarkable power in healing those resulting from the employment of mercurials.

Similar illustrations are derived from many of the mineral oxides and salts; for instance, those of arsenic, lead, copper, and iron; but we must not occupy much of our time in repeating them. One illustration, however, derived from the homoiopathic action of two diseases, deserves notice. It is that of the vaccine and variolous poisons, the first of which, he maintains, derives its anti-variolous powers from no other source save that of producing a similar train of morbid phenomena,—modified, mitigated, and depurated, however, by passing through the system of the cow.

Lastly, the effects of burns and scalds on the animal body show in a striking light, according to Hahnemann, the efficacy of the homoiopathic system. When the cook scalds his hand, he holds it at the fire, without regarding the immediate increase of pain; because experience teaches him, that by this means in a very short time, often within a few minutes, the burn is thus perfectly cured, and every trace of pain disappears. Varnishers also are in the habit of applying to burns spirits of wine, or the oil of turpentine warm, with the effect of a speedy alleviation of their sufferings. The value of this method of treatment, M. Hahnemann further remarks, was recognized by

Fernel, Hildanus, and Sydenham, and more recently by John Hunter, Benjamin Bell, and Kentish, who found hot spirits and oil of turpentine more effectual by a great deal than cold applications in the treatment of burns.

From all these facts and arguments, M. Hahnemann was early led to maintain that the principle so generally recognized in the treatment of disease of *contraria contrariis sanantur* is decidedly erroneous; and that the opposite system, which he now brings forward, or the principle of *similia similius sanantur*, is more natural, prompt, sure, and efficacious than any other hitherto proposed. This method, which depends on choosing agents which produce therefore like effects to those caused by the disease itself, (ὁμοιον παθος) he therefore denominates the *homoiopathic*, and proceeds to expound the principles on which it depends in a series of propositions or aphorisms. Of these we shall make a selection of the most essential and important.

Commencing with the indisputable facts that the only duty of the physician is to restore health to the sick, or to cure; that the perfection of a cure is to restore health rapidly, safely, and agreeably; that, with this view, in each individual case the physician must distinguish what is wrong, and see the means by which it is to be rectified;—M. Hahnemann proceeds, after a considerable number of identical propositions and truisms, regarding experience, &c. to state, that each disease supposes a certain change in the organism, which is generally invisible and unappreciable by itself, but displays itself by certain external signs and marks; that amidst these, modified as they often are by habit of mind, occupation, mode of life, habits, social relations, age, sex, &c. the physician must distinguish the essential cause from the occasional, and must adopt his measures, first to the general character of the morbid change, and next to the particular modifications which it undergoes in every individual case; and lastly, that all trials made with care show us that continuous morbid symptoms, far from being obliterated and annihilated by opposite medicinal symptoms, as those induced by the antipathic, or enantiopathic, or palliative, reappear, on the contrary, with greater intensity than ever, and manifestly aggravated, after having been for some time abated and ameliorated. He thence infers, that the only alternative left is to employ those remedial agents on the homoiopathic principle, in which the practitioner studies to direct against the assemblage of symptoms that medicinal agent which is known to have the property of producing on the human economy, in the state of health, the artificial disease most similar to the natural one submitted for treatment. In the conception of this method of cure, he next remarks, pure and unbiassed experience shows, that in truth every medicine which in healthy individuals possesses the power of producing effects similar to those of any given disease, possesses also, when given in suitable doses, the property of extinguishing that disease promptly, perfectly, and permanently, by virtue of a natural law of homoiopathy hitherto overlooked, but, nevertheless, at all times in operation; namely, that any given dynamic affection in the living organism is extinguished permanently by a more powerful agent, when the latter, though not of the same species, closely resembles it in mode of operation. In the admission of the truth, stability, and regularity of this law, the question of its scientific theory, M. Hahnemann contends, is of no importance. He might have added, that if in truth it be a law of the animal frame, it admits of no ulterior explanation, and must be received as an ultimate or first principle in physiological science.

Having established these preliminary points, M. Hahnemann maintains, that, as every disease which does not belong to surgery is a particular and entirely dynamic change in the vital force, indicated by sensible external signs, it results that the homoiopathic medical agent selected by an able physician will convert it into another medical disease very analogous but a little more intense; and while the latter or the artificial disease is such that it is speedily overcome by the vital force, and is thereby annihilated, the previous natural morbific power, which was mere force without material, is thus forcibly terminated and annihilated.

This reasoning is in a considerable degree hypothetical; nor does the conclusion now drawn necessarily flow from the premises. That it is a hypothesis M. Hahnemann admits, and adduces in favour of its probability the following facts.—1. Medicines possess a power of altering the health, that is, the functions of the living body, in a degree much higher than natural morbid irritations; for diseases are cured and subdued by appropriate medicines. 2. Physical and moral agents denominated morbific influences possess no absolute power of changing the health; and it is only where the organism is disposed to feel the influence of morbific agents that the sensations are felt and the actions performed in a different mode from the healthy one. 3. The greater intensity of artificial diseases is nevertheless not the sole condition of the control which they exercise over natural or spontaneous diseases. It is equally requisite that there be the closest possible similitude between the disease arising spontaneously and that induced by artificial means; for on this resemblance, joined to the greater intensity of the factitious disease, depends the power possessed by the latter of extinguishing the former.

With the view of demonstrating these propositions, M. Hahnemann adduces various facts to prove two principles;—the one, that nature herself is in no case adequate to cure a disease already existing by the superinduction of another *dissimilar* disease, however violent; and the other, that the most energetic medicines are equally incompetent to effect cures, unless they are of the kind to produce homoiopathic effects. This presents three cases.

1. If two dissimilar diseases of equal intensity meet in the same subject,—or, if the oldest is most powerful, the new disease will be expelled from the system by that which preceded it, and cannot establish itself. A man, for example, afflicted by a severe chronic affection, will not feel the assaults of an autumnal dysentery or any other moderate epidemic. According to Larrey, the plague of the Levant does not appear in places ravaged by scurvy; and persons affected by cutaneous diseases enjoy equal immunity. Rickets prevent the efficient developement of the vaccine action according to Jenner; and Hildenbrand assures us that consumptive persons are not attacked by epidemic fevers unless they are extremely violent. In like manner, a chronic disease of long standing does not yield to the ordinary method of treatment by allopathic medicines, or those which do not produce in persons in health a similar train of symptoms.

2. If the new disease, dissimilar to the old, is more painful, it suspends the latter till it has finished its course, or is cured; but the old disease then reappears. Tulpius informs us, that two children having contracted ringworm got rid of epileptic fits, to which they had till then been subject, and which recurred on the disappearance of the eruptive disease of the head. Schoepf saw itch disappear on the occurrence of scurvy, and return on the cure of the latter disease. A severe attack of *typhus* suspended the progress of an ulcerating pulmonary consumption, which proceeded at its original rate after the subsidence of the febrile symptoms. *Mania* appearing in a consumptive subject obliterates the consumptive symptoms; but the pulmonary disease recurs and destroys the patient on the cessation of the maniacal attack. He then adverts to instances of the incompatibility of measles and small-pox in the same subject at the same time, and that of scarlet-fever and the vaccine disease, and the vaccine disease and measles. Every one will remark how near this hypothesis approaches to that of John Hunter on the incompatibility of two similar morbid actions in the same subject at the same time; and yet perhaps it would not be difficult to point out exceptions which would require some modification and limitation of the rule here established by Hahnemann.

3. It may also happen that the new disease, after having long operated on the economy, at length connects itself with the original disease, in spite of the dissimilitude between them, and forms thus a complicated disorder of such nature, that, nevertheless, each occupies a particular region in the organism, and that each is established in the organs sympathizing with it, while the rest is left to the dissimilar portion. Thus a venereal affection may become scabious, and an itchy one venereal. In the case of the concurrence of two acute contagious diseases which have no resemblance, for instance measles and small-pox, in general the one suspends the other, as already said. In certain violent epidemics, however, cases have occurred in which two acute dissimilar diseases have attacked the same individual, and have mutually complicated each other for a short time. The author, then, for proof of this assertion, refers to the cases recorded by Patrick Russell, Rainey, Maurice, Ettmuller, and Zencker.

M. Hahnemann next proceeds to expose the fallacy, the inertness, and, as he believes, the mischief of the *antipathic*, *enantiopathic*, or *palliative* practice of medicine, which has been so generally in use among physicians, and which, he contends, has been misapplied, chiefly by overlooking the distinction between the primitive and the secondary effects of the medicines exhibited, and consequently giving these remedies not only in too large doses, but always augmenting the doses, as they appeared less capable of producing the expected results. To take an example, valerian, which most physicians (in Germany we presume,) employ to oppose the almost paralytic debility, physical and moral, of several varieties of typhus, possesses a primary operation,—its stimulant quality, and after the reaction of the system a secondary effect,—manifested by stupor, palsy, and weakness of intellect; and, in giving the large doses of this powerful agent, they have overlooked the fact, that the patients so treated were usually those among whom mortality was greatest. If physicians, he continues, had been capable of reflection on the melancholy results of the application of remedies in this manner, they must have long ago discovered that a course diametrically opposite ought to have been pursued in order to attain perfect and permanent cures; and, as the stimulant effects were short and transitory, when it was determined to administer any given remedy, the dose ought to have been the smallest possible.

To these views of the comparative merits of the *antipathic* or palliative, and the *homoiopathic* or radical method of cure, M. Hahnemann informs us, he has been led by the aid of the following considerations, which result from numerous facts, and which, however obvious and important to the healing art, he informs us, no one before himself was fortunate or penetrating enough to discover. Our readers will trace a close resemblance between his views and those of Brown on the operation of medicines.

Every agent which acts on life produces a change more or less considerable in the actual mode of the vital force, or induces in the health of the individual a certain modification of longer or shorter continuance. This, which may be called the *primary* effect, though caused by the medicinal property, and by the vital force, belongs, nevertheless, most to the power of the agent. The vital force, however, tends always to display its energy against this influence; and the result of this reaction, which belongs to the conservative power, or the automatic energy of the system, constitutes what may be named the *secondary* effect.

During the duration of the primary effect of artificial morbific agents, or medicines, in common language, on a healthy frame, the vital force appears to perform a part altogether passive, as if it were compelled to undergo the impressions of the power which acts on it from without. Afterwards, however, it appears also to be roused from this inert state; and then, if there be any state directly opposed to the primary, it betrays a tendency to produce this in a ratio proportional to its own energy, and to the degree of influence exercised by the morbid or remedial agent; and if there be no such condition diametrically opposite to the primary, the economy endeavours to obtain the preponderance, by destroying the change already effected by the remedy, and substituting its own condition or that of *reaction, or conservative action.*

To illustrate these two states, M. Hahnemann adduces the effects of immersing the hand in hot water, of which the primary influence is to render the hand immersed warmer than that not immersed, and after some time to leave it colder; the paleness and sensibility to cold often felt the day after taking wine to excess; and the glow of heat which succeeds immersion of the arm in cold water, snow, or ice. The instance which he adduces of coffee being eventually succeeded by heaviness and tendency to sleep is, if not erroneous, at least not universally true and applicable. He is more fortunate in his example from opium, which, if given one evening largely to procure sleep, is often followed by sleeplessness the subsequent night; but he seems to overlook the fact, that even the hypnotic property of this agent is often a secondary one, resulting from the reaction of the system, and that it may be administered so as to excite. There is also some fallacy in the instance of diarrhœa, alleged to succeed constipation, caused by the exhibition of opium; since that diarrhœa does not so much result from the opium as in many instances from the previous morbid state of the intestines, for which the opium is given, having never been effectually removed. We exclude, of course, those peculiar exceptions in which opium has been followed by purging without intestinal disease. The best example, however, of secondary action, given by the author, is that derived from the action of purgatives, which invariably leaves the intestinal tube more constipated than before; and which seems a more genuine example of the torpor and *inertia* succeeding to over-stimulation than any other which he has adduced. " In this manner," he concludes, " to the primary effect of large doses of agents which powerfully affect the organism in the sound state, the vital force opposes a state diametrically opposite, whenever it can cause the production of such a power."

The only way to obviate this reaction M. Hahnemann therefore infers, is to exhibit medicines in doses so minute that they can produce the primary effect only without the secondary, or the reaction of the system, or at least the latter in so slight a form as not to exceed the degree necessary to the restoration of health. These infinitely minute doses, he contends, in the homoiopathic mode of treatment, leave in the system after the primary action, a medical disease so very slight and transitory, that the organism does not require to employ against it a degree of reaction superior to that necessary to raise the present state to the habitual degree of health; and after the extinction of the symptoms of the original disease, no great efforts, he contends, are requisite to re-establish the latter condition.

These views possess a certain degree of plausibility, and are very ingenious. But it may be justly questioned, whether, in the homoiopathic system, and by obviating the secondary effects of medicines as far as possible, the original diseases are by any means more easily or more effectually removed than upon the allopathic system. The practice of giving very minute doses of medicines can be admissible only in chronic and very mild diseases? In acute disorders, of rapid progress, it is manifest that they have no time to produce any remarkable change on the system; and in the case of severe disorders it is quite inconceivable how doses the hundredth part only of those commonly given can produce any beneficial result. Let us take the instance of a smart fever, combined with symptoms of some local congestion of the vascular system. What are the minute doses of medicines to effect in such a case? When the allopathic physician has a disease to treat, he has certain objects to accomplish, and to the accomplishment of which certain doses of medicines are indispensably requisite. He must open the bowels; he must restore the suspended secretions of the glands;

and he is desirous to remove the sensation of thirst, and to render the skin moist. For the first purpose, he gives purgatives; for the second, blue-pill, or calomel with vegetable diuretics; and for the third, minute doses of the neutral salts. All may be inefficient in the meantime, for this reason, that none of these states are primary, but depend on some more general state of the economy. He then is led to have recourse to venesection; and forthwith the bowels become obedient to the operation of purgatives, the liver and kidneys to the mercurials and diuretics, and the skin to sudorifics; and in the whole of this inaptitude, it was not so much that the doses of medicines required to be diminished or increased, as that the system required to be quickly brought into a state favourable to their operation; and after the superinduction of which the functions began to return to their natural state.

M. Hahnemann, we conceive, adduces examples too partial of the bad effects of the allopathic mode of treatment, and on these founds all his objections to that unfortunate method of practice. We do not pretend to assert that it is free from errors; for perhaps no system that ever was contrived or ever will be contrived shall have such an advantage to recommend it. But on examining its defects, its merits ought also to be considered, and a general view of the whole system ought to be the means by which its good and bad qualities are to be determined. A defect,—the error of some individual, or the misapplication of some doctrine, cannot be justly or candidly adduced as the leading objections to a whole system of principles and practices. This mode of raising an objection is well illustrated by the example which M. Hahnemann adduces of the allopathic employment of opium to relieve pain. At first, says he, the organism feels as in health, without pain or numbness. But the opposite medicinal symptom being unable to occupy the place of the existing disease, as in the homoiopathic method, where the remedy induces an artificial disease similar to the natural one, but more powerful, the vital force being thereby incapable of being affected by a disease like the original one, the latter is not subdued or annihilated. Now, in this case, and in all similar ones, the inefficiency of the opium is occasioned not by its employment on the allopathic principle, so much as by being inaptly and unseasonably employed. Pain, the symptom for which it was used, may arise from various causes; inflammation, congestion, spasm, *neuralgia*, &c. and unless the primary morbid action were extinguished, how can it be expected that the symptom should be removed by any medicine which does not operate on that primary process? Opium, it cannot be denied, given in this manner, disguises the true nature of the symptom, and is in such cases injurious, in so far as, by this concealment, it prevents the practitioner from employing those agents which alone are calculated to remove the primary morbid affection.

M. Hahnemann, however, with whom we now proceed, after some more rather prolix and tautological argumentation, comes to the main object of his exposition, by proposing the three following points for inquiry.

1*st*, By what means can the physician arrive at the knowledge of any given disease necessary to undertake its treatment? *2d*, What course must he employ to study the agents destined for the cure of natural diseases, in other words, the morbific power of medicines? and, *3d*, Which is the most judicious mode of applying those artificial morbific agents in the cure of diseases?

To illustrate the first point, he distinguishes diseases after the manner of Aretaeus into *acute*, or those which consist in rapid and violent operations of the vital force disturbed in its normal rhythm, which terminate in shorter or longer periods, but always after moderate duration; and a second class, the *chronic*, which are often indistinct and imperceptible even in onset, attack the economy each after its way, and gradually divert it so far from the state of health that the automatic vital energy destined for the support of that condition is no longer adequate to it, and hence allows these deviations to increase to such an extent that they at length involve the destruction of the system. These *chronic* disorders M. Hahnemann singularly enough ascribes to infection by a chronic miasm, which, if it means any thing at all, must circumscribe their number very much.

Acute disorders again M. Hahnemann distinguishes into two categories; one consisting of those which attack isolated individuals, in consequence of the noxious influence of such injurious agents as the excesses of the table, privation of food and drink, excessive physical impressions, extremes of cold and heat, fatigue, excitement, and all those moral causes which operate forcibly on the human constitution. The second order comprehends those which attack large bodies of human beings, and may be developed in various parts under the influence of changes in the meteorological and terrestrial constitution of the globe, and of the operation of which only a small number of individuals are susceptible. To this head are referred all those which attack many individuals at once with nearly similar symptoms; a class which is then distinguished by the name of *epidemic* diseases, and which are liable to acquire contagious properties when they act on densely compacted masses of human beings. These diseases, which are denominated fevers, though frequently originating from war, inundations, and famine, may also depend on acute miasms, which always reappear under the same form, and which are therefore distinguished by particular names, and some of which attack only once in the course of life, *e. g.* small-pox, measles, hooping-cough, scarlet fever; while others may attack several times, *e. g.* oriental plague, yellow fever, Asiatic *cholera*, &c.

We have already adverted to the peculiar view entertained by M. Hahnemann of the origin of chronic distempers,—a character which M. Hahnemann refuses to all those diseases which originate in intemperance, residence in unhealthy situations, and the cultivation of injurious and laborious occupations either of mind or body, because they are independent of what he terms a *chronic miasm* or morbid poison. The surprise of medical readers in this country will be farther increased when we tell them that he traces the whole of this multiplied host of distempers to three general heads, the syphilitic poison, *sycosis*, or the fig-eruption, and itch. The last, however, is a most comprehensive source of disease; and to the operation of this poison in a latent form, in which it produces insufferable sensations of itchiness internally, M. Hahnemann ascribes nervous weakness, (*asthenia* of Sauvages and Willan?) hysterics, hypochondriac complaints, *mania*, melancholy, *dementia*, fury, epilepsy, and all sorts of spasms, *mollities ossium*, and rickets, *scoliosis*, and *cyphosis*, or curvature of the spine, *caries*, cancer, *fungus hæmatodes*, gout, hemorrhoids, jaundice, *cyanosis*, dropsy, *amenorrhœa*, *hematemesis*, *epistaxis*, *hemoptysis*, *hæmaturia*, *metrorrhagia*, asthma, suppuration of the lungs, impotence and sterility, megrim, deafness, cataract, amaurosis, gravel, palsy, *anaisthesia*, and pains of all kinds, which he asserts undeservedly figure in pathological systems, as so many distinct diseases. After this heterogeneous and incongruous list of disorders, which are said to originate from the internal operation of an itchy or *psoric* principle, we think it is unnecessary to attach much importance to the pathological ideas of M. Hahuemann. Yet how singularly can men be deceived, and with what extravagant hallucinations can physicians and founders of new theories,—we beg pardon for insulting the names of Newton, D'Alembert, Boscovich, Haller, Whytt, Cullen, and Bichat, by this application of the term,—delude themselves, when they bring before the world their speculations on the nature of diseases. With the greatest complacency, and a degree of egotism quite unrivalled, unless among a class of persons whom we shall not name more distinctly, M. Hahnemann informs us that it required twelve years of laborious researches to discover the great truth now stated, which had remained unknown to all his predecessors and contemporaries, of the incredible number of chronic distempers originating from the psoric contamination. Where the foundation is so unstable, how can the superstructure be secure? From the pathology and the clinical inquiries of M. Hahnemann, we must proceed to his second object of inquiry;—the study of the agents employed, or to be employed, in the cure of natural disorders.

The only way in which this can be accomplished in a satisfactory manner, according to M. Hahnemann, is to ascertain their exact effects under three limitations; 1*st*, separately and free from any complication or combination with each other; 2*d*, in very moderate doses; and 3*d*, in persons in the enjoyment of perfect health. In this inquiry we find the egotism of the author does not leave him; for he tells us, "I am the first who has followed this route of investigation with a degree of perseverance which can arise and be supported only by the intimate conviction of this great truth so valuable to mankind,—that the homoiopathic administration of medicines is the only certain mode of curing diseases."

With the view of ascertaining the genuine effects of medicines, he recommends each substance to be taken alone and pure; and, if it must be combined with alcohol, allowance must be made for the additional irritation. The individual who forms the subject of experiment should observe a moderate regimen of simple food, free from spices, and with drink as little stimulating as possible; he should avoid, during the whole course of the experiment, fatiguing labours of body and mind, excess or debauch of all kinds, and disorderly passions; and he should keep his mind perfectly clear and disengaged, in order to observe and register the effects as they take place. The individual uniting these qualities should take in the morning, fasting, the medicine to be made the subject of experiment, in the usual dose, dissolved, if possible, in about ten parts of water not quite cold. If at the end of two hours this dose has either produced no effect or a very insignificant one, the individual takes a stronger dose, or, according to circumstances, double, which is in like manner to be mixed in ten parts of water. If the first dose operates forcibly at first, and after some hours loses its activity, the experimenter ought to take the second stronger only next day, equally fasting; and if the last also disappoints expectation, he should take the subsequent morning another dose still more powerful, which may be four times as much as the first, and which will then assuredly produce the proper effect.

Any given medicine does not affect every person in the same manner; and there is in this particular infinite diversity. A person of delicate appearance may be almost unaffected by a medicine known to be energetic when administered in an average dose; while he may be remarkably influenced by agents greatly more feeble. In like manner very robust persons experience remarkable morbid symptoms from medicinal agents mild in character, and are little affected by other substances much more energetic. As it is impossible to anticipate which of these two will be the result in any given case, it is proper in every instance to begin with the small dose, and to increase it progressively, if it be judged requisite, either at the end of some hours on the same day, or on a future day, with the rule of nearly doubling the dose each time. It is unnecessary to follow the author in his minute and rather prolix directions, however useful they may be, in discovering the peculiar effects of remedies on individuals, at different times, in different situations, and under different circumstances, or the necessity of remarking the influence of age, sex, habit, &c.; for in certain cases the physician must ascertain the genuine operation of the medicine on other individuals, and register these effects in the same manner as in himself. It is sufficient to say, that, by collecting observations and experiments made in this manner, M. Hahnemann expresses the confident hope that the practical physician shall possess a store of remedies, the effects of which are ascertained with such accuracy and precision, that the art of healing may then approach the certainty of the mathematical sciences. The author, however, appears either to forget this remarkable declaration, or to care little for consistency, when he allows, a few pages after, that it is almost impossible for the symptoms of the medicine to cover those of the disease with the same exactness as one triangle does another, the sides and angles of which are alike. We shall meet with other examples of the same imperfection.

Having thus acquired the necessary information on the powers and properties of remedial agents, the next object is to adapt them on homoiopathic principles to the cure of diseases.

The first point is, to select from the list of therapeutic agents that which in its primitive action on the human frame bears the closest resemblance to the action of the disease which is submitted for treatment; and this, it may be conjectured, is no easy task; since it must be difficult not only in some cases to know the exact action of the disease, for instance *diabetes*, *cholera*, fever, gout, &c. but to tell what remedy among a thousand comprehends all the effects of these complicated and badly understood disorders. M. Hahnemann accordingly tells us, that it is necessary to attend particularly and exclusively to the striking and characteristic symptoms of the disease, and to neglect those general and vague complaints which are common to every form of disordered health and impaired vital power.

A remedy thus selected is more likely to produce true homoiopathic, and therefore directly sanative effects, in the smallest possible dose, and more likely, in such circumstances, to produce sanative effects without much apparent augmentation of the disease,—a phenomenon which must be anticipated in almost all homoiopathic cures. It may happen, nevertheless, that it is impossible, among the known morbid effects of any medicine, or class of medicines, to discover any train of symptoms which resemble those of the disease to be treated; and in this case the physician, who is compelled to make choice of the medicinal agent most similar, must not expect an immediate advantageous result from a remedy so imperfectly homoiopathic. This case, however, he contends, is rare; and, notwithstanding the small number of medicinal substances, the true and pure properties of which have been determined, when the physician must employ such agents, the inconveniences which result diminish as soon as a more accurately homoiopathic remedy is employed.

When a remedy not exactly homoiopathic induces accessary symptoms rather severe, the first dose is not allowed to exhaust its action; but the modification thus produced is made the basis of employing a new remedy, which may be then more easily accommodated to the disease, and the first dose of which is adequate, if not to destroy the diseased action, at least to render the cure more near. If this new remedy is not adequate to effect a complete cure, the physician must again examine his patient, and discover what peculiar train of symptoms requires to be treated, and must adopt his remedy accordingly.

There is yet another case. It may happen that a disease shall present such a complication, diversity, and multiplicity of symptoms, that no single remedial agent possesses properties sufficiently varied and numerous to cover, as M. Hahnemann terms it, all the phenomena of the disease; and that while one agent may present a homoiopathy with one train of symptoms, a different set may require a medicine totally different. In such circumstances, the physician must neither administer both remedies at once, nor make the one succeed the other, without a previous attentive examination of the state of the disease. The proper plan is then to give first the remedy, which, on homoiopathic grounds, seems most urgently required, and when, by this the most pressing symptoms of the disorder have been subdued, to examine once more, in order to ascertain whether the other symptoms have undergone any modification; and the course then to be pursued is to adopt the medicine given to the existing symptoms. For the other more minute details of this system of procedure, which may be easily conjectured from the specimens now given, we must refer to the work itself. It may not be improper, nevertheless, to give by way of illustration an example from the fragments of the author, of the process of examination, reasoning, and administration, pursued by the great founder of this system himself. This at least will communicate to our readers a much clearer idea of the homoiopathic mode of practising physic than all abstract general directions.

1. S. a stout woman, of some forty odd years, a washerwoman by occupation, was already for three weeks incapacitated from earning her bread by various complaints, when she applied to M. Hahnemann.

1. At every motion, but especially when she rose, and particularly when she made a false step, she felt darting sensations in the pit of the stomach. 2. In the horizontal position she was easy, and felt pain no where, neither in the side, nor in the pit of the stomach. 3. She could not sleep beyond 8 in the morning. 4. She ate with relish; but immediately after she felt stomach-ach. 5. Water then flowed into the mouth, and trickled from the lips. 6. Whenever she ate she experienced flatulent discharges, but without benefit. 7. This woman was violent in temper, and inclined to anger. She was bathed in sweat when the pains were violent. Fifteen days before the menstrual discharge took place regularly. All other functions were natural.

Regarding the first symptoms, nightshade, bark, and the poison-sumac, indeed, cause pricking sensations at the epigastric *fossa*; but neither of them induce those sensations only while the patient is in motion, as in this case. *Pulsatilla* causes them, indeed, when the patient makes false steps, but rarely; and this substance neither induces the disturbed digestion indicated by 4, 5, and 6, nor the same moral condition. Bryony alone causes darting pains during motion; and it also produces pricking sensations under the breast-bone when the arm is elevated; but it excites them in like manner in all other points at every false step. The negative symptom in (2.) accords particularly with bryony. Few medicines, excepting *nux vomica,* and the poison-sumac, but the symptoms of which are dissimilar, suffer pains to be entirely dormant during rest, and in the horizontal position. The third symptom is produced by several medicines, and also by bryony. The fourth symptom, relative to the stomach-ach after eating, belongs to several medicines; St Ignatius' bean, *nux vomica,* mercury, iron, deadly nightshade, *Pulsatilla nigricans,* and cantharides; but it is uncommon, irregular, and rarely accompanied with pleasure in taking food, which happens in the case of bryony.

With regard to symptom 5th, several medicines cause a species of water-brash exactly as bryony; but they do not produce the other symptoms presented by the patient. Bryony alone excels them in this respect. The flatulent discharges (6.) are procured by few medicines; but none produces them more frequently and perfectly than bryony.

The state of the moral feelings is one of the chief symptoms in diseases; and as bryony produces in this respect a condition similar to that which exists in the patient, this medicine, taking this with other circumstances, is entitled to the preference over every other as a homoiopathic remedy.

From the robust health of the patient indicating that the disease was very intense, as it caused pains preventing all occupation, and further, that the vital forces were hitherto not much impaired, I administered one of the strongest homoiopathic doses,—*a whole drop of juice of bryony undiluted,* and I ordered the patient to return after the lapse of forty-eight hours, expressing my belief to a friend present that in this period she ought to be restored to perfect health. At the end of two days, when the woman did not appear, this gentleman went to her residence and learnt, that the day after she consulted me she was well and able to resume her labour.

2d Case. A pale feeble man, aged 42, who spent his life in writing, applied to me on the 5th day of an attack of illness.

1. The first evening, without any obvious cause, he had stomachachs and giddiness, with frequent flatulent discharges from the stomach. 2. Next night, two hours after midnight, vomiting of sour matters. 3. The following evening violent flatulent discharges. 4. On the day of the visit sensation of disagreeable taste and smell. 5. The patient himself imagined that the food was undigested in the stomach. 6. The head was loaded and sensitive. 7. The slightest sound was disagreeable. 8. The character of the patient was mild and patient.

Some medicines cause giddiness with stomach-ach, as *Pulsatilla nigricans,* which induces them in the evening,—a property peculiar to a very small number only of others. Thorn-apple and *nux vomica* induce vomiting of sour matters, and a mucous secretion of an acid smell, but not during the night. Valerian and *Cocculus indicus* cause vomiting in the night, but not of acid matters. Iron alone causes vomiting in the night, and may render them acid; but it does not produce the other symptoms here to be considered. *Pulsatilla* excites not only sour vomitings in the evening, and vomiting during night, but also other symptoms presented by the disease, such as the flatulent discharges, their fetid, putrid, and acid sensations, and that of the consciousness of undigested food in the stomach, most of which are almost peculiar to this substance. The 6th symptom is also produced by *pulsatilla* as well as by *St Ignatius'* bean, which, however, does not cause the others. Pulsatilla causes something similar to the 3d symptom, as well as excess of sensibility of other organs of sense, for instance sight. Though intolerance of sound is a consequence also of *nux vomica* and *St Ignatius'* bean, these substances produce it in a nicer degree, and do not cause the other symptoms. Lastly, *pulsatilla* offers in the 8th symptom an analogous state of moral temperament.

As the patient could not be cured with greater ease, certainty, and durability, by any other agent than *pulsatilla,* I immediately prescribed it in the most minute dose, that is, half a drop of the quadrillioneth part of a strong drop of the expressed juice.

The remedy was taken in the evening, and next day the patient felt no more uneasiness; his digestion was restored; and eight days after when I again saw him, he had no recurrence of his complaints.

A good deal of this mode of observing the phenomena of disease, and prescribing for its treatment, we cannot refrain from regarding as extremely silly, frivolous, and irrational, and by no means justifying the extravagant panegyrics which its author lavishes on this celebrated system of homoiopathy. Where, we must ask, did ever any accurate observer hear or see an instance in which the temper or the moral constitution was affected by a medicinal agent? To assert that bryony renders the temper furious and irascible, and that pulsatilla makes a fury as gentle and patient as a lamb, is a proposition which is quite new to our psychological system, and we believe is unknown to every one except the disciples of the school of M. Hahnemann. As to the fact, whether the medicine prescribed really effected the cure, it might or it might not according to the faith of the patient. A dyspeptic laundress, or a hypochondriacal clerk, might very easily be cured of symptoms of indigestion, by time, rest, and the necessary abstinence from food, without having recourse to the mummery of receiving so minute an allowance of medicine from the physician or apothecary; and when to this is added the effect of imagination,—a power of sovereign influence on such persons, we think the *homoiopathic* doses may as well be denominated *oudenopathic.*

Notwithstanding this manifest objection, however, the author continues with the greatest confidence to inculcate the necessity of giving those inconceivably minute doses, as those alone from which benefit is to be expected. To the objection, that other physicians, or what M. Hahnemann, with great civility, denominates *vulgar practitioners*, administer medicines in much larger doses, he replies that these medicines are directed not to the affected parts of the economy, but to those only which are not affected by disease. From this, therefore, he maintains, no conclusion, as to the inefficacy of the doses, can be drawn; since pure experiment, he adds, demonstrates the necessity of the homoiopathic mode of treatment. From this, he maintains, we learn indisputably, that when the disease does not depend on a serious change in an important organ, supposing the disease to be chronic and complicated, and when care is taken to protect the patient from all extraneous medical influence, the dose of the homoiopathic remedy can never be sufficiently weak to make its strength inferior to that of the natural disease, which it may extinguish, providing it produces energy necessary to excite, immediately after being taken, symptoms a little more intense than its own. This conclusion, he contends, rests on experience; and, therefore, there is no possibility of questioning its validity.

The effects of homoiopathic doses, he informs us also, are not impaired in the same proportion as the material quality of the medicine diminishes in homoiopathic proportions. Eight drops of tincture taken at once do not produce on the human body an effect four times as great as a dose of two drops; but merely something like twice as great. In like manner, a drop of mixture of a drop of tincture, with ten drops of a liquid void of medicinal properties, does not produce an effect tenfold greater than a drop ten times more diluted, but merely an effect not quite twofold. The progression continues according to the same law, so that a drop of the most dilute medicine ought still to produce, and really does produce, a very considerable effect. "I have seen," adds M. Hahnemann, "a drop of the tincture of *nux vomica* at the decillioneth degree of dilution produce exactly the half of the effect of another at the quintillioneth degree, when I administered both to one individual under the same circumstances."

Admitting that this fact is accurate, then M. Hahnemann is correct in deducing the inference, that the energy of any medicine is diminished by diminishing the measure of the dose, and, what is more paradoxical, that its influence is augmented rather than diminished by dilution; because, argues M. Hahnemann, it is then in a state of more minute division, and is consequently in contact with a more extensive surface, and is distributed to a much greater number of nerves. This consideration leads him to the preference of liquid over solid medicines, because the former, by their susceptibility of absorption, act on a much more extensive scale in the system.

With all these advantages, however, in its favour, we confess our inability to understand by what means the homoiopathic system can be universally, or even generally, applicable as a therapeutic code. To take the arguments which M. Hahnemann employs to uphold and defend his theory, let us put the question, is it possible to find homoiopathic remedies for all orders and kinds of disease? What medicinal agent in the habitable globe induces the phenomena of ague, of remittent fever, of *synochus* and typhus, of pleuritic or peritoneal inflammation? We know that the irritating gases, as sulphurous acid, chlorine, ammoniacal gas, and some others, can inflame the tracheo-bronchial membrane in great perfection; and produce as exquisite cases of *laryngitis*, *bronchitis*, and peripneumony, as any one would desire to treat. We know also that many substances of the irritative class produce gastric and gastro-enteric inflammation; and in any one of these given cases there could be no lack of homoiopathic agents. But what substances, we beg to ask, will homoiopathize with a pleuritic or peritoneal attack, with the complicated and extensive morbid action of fever, or with the proteiform and migratory nature of gout?

In answer to some of these questions, which M. Hahnemann's foresight probably told him might be proposed, we find nothing but gratuitous assertions, vague and unsatisfactory statements, and speculations founded on the partial and exclusive views of homoiopathy. Thus, he sets out with telling us, that almost all medicines in their pure action excite a peculiar fever, and even an intermittent fever. We suppose that in this general catalogue he includes *cinchona* in all its varieties, the willow-bark, oak-bark, chamomile, and all the bitter aromatics which have been at any time used in curing ague. Now, we know of no remedy for this disease which was ever known to induce intermittent or aguish symptoms, except arsenic; and even the power of this substance in producing these effects rests on very doubtful evidence. In all situations, not marshy, where intermittent fevers prevail, M. Hahnemann ascribes them to the influence of a *psoric* or itchy miasm, or contamination; and, accordingly, he recommends the employment of antipsoric remedies to re-establish the health. We fear we should exhaust the patience of our readers did we attempt to follow the author through the long and circuitous route, which afterwards leads to nothing definite on this subject.

The foregoing sketch, which is sufficiently minute for medical readers in this country, comprises a general view of the leading features of homoiopathism; and we have omitted nothing, except some rather vague views of the author on the theory and treatment of mental diseases, according to this system, and on the medical effects of animal magnetism,—for both of which we may refer the curious reader to the work itself.

Let us not, however, be misunderstood. Though we disapprove of the homoiopathic doctrine as one of universal application, we believe that, with certain restrictions, it may be useful in the practice of physic. The theory which is false when applied generally, may be true in certain cases and circumstances. At all events, the *Organon* of M. Hahnemann deserves the perusal of the enlightened physician, if for no other purpose but to see the ingenious application of many isolated facts. The reading of M. Hahnemann has been extensive; and it ought not to be forgotten, in judging of the present work, that he was the first person who undertook to make his countrymen acquainted with the most philosophical system of therapeutics yet laid before the public in the *Materia Medica* of Cullen. It appears to us by no means improbable that his passion for inquiry in this department, and the boldness and freedom of his criticisms, either led him to translate the work of Cullen, or was in some measure the result of that meritorious task. We could have wished that he had imbibed a portion of the philosophical scepticism and critical sagacity of that able physician. But it is not every one who can bend the bow of Ulysses; and it is perhaps no reproach to M. Hahnemann that he has failed where none has succeeded. These considerations, with the great repute of this system abroad, have led us to give more space to this article than its other merits would warrant. But as truth can only be attained by remarking and avoiding the errors committed by others; if by this means any new light can be thrown on the operation of our usual medicines, our labour shall not be unavailing.

The present volume comprehends also in an appendix, essays on the Efficacy of the Minute Homoiopathic doses; on the sources of the ordinary *Materia Medica;* reflections on *Cinchona;* some additions to the *Organon*, the material part of which we have embodied with the foregoing article; and lastly, a Homoiopathic Pharmacopœia. For all these now appearing in a language in which they can be more generally known and appreciated than in their native German, the medical world is indebted to that indefatigable person, M. Jourdan. Let us not forget also the spirit and adventure of M. Bailliere, who has done every thing practicable for the easy introduction of foreign literature in general, and medical literature in particular, into this country. The exertions of M. Bailliere in the cause of science deserve the encouragement of every one of its votaries, and we trust will not fail to obtain it.

ART. II.—*An Account of the Life, Lectures, and Writings of William Cullen, M. D. Professor of the Practice of Physic in the University of Edinburgh.* By JOHN THOMSON, M. D. F. R. S. L. and E. Professor of Medicine and General Pathology in the University of Edinburgh. In two Volumes. Vol. I. Edinburgh and London, 1832. 8vo. Pp. 668.

IN the history of modern medical science no name stands higher than that of William Cullen, either in this country or on the Continent; and all the attempts made to depreciate his merits have terminated in placing them in a still more conspicuous light, and in fixing his reputation on a wider and more durable basis. At all times, but particularly of late, it has been a sort of fashion with many to underrate the labours of this distinguished genius, and to represent him as a mere rash speculatist and fanciful innovator, who was totally ignorant of the practical details of his profession, who could not, and did not, take the trouble to observe the phenomena of disease, and who was ever ready to supply, by the creations of his own fancy, any deficient links in the chain of facts requisite to support a preconceived hypothesis. The only charitable mode in which these statements can be understood, is by supposing that the persons by whom they are made, were imperfectly acquainted with the writings of the author whom they depreciated,—that they had never taken the pains to study them thoroughly and extensively, and had looked only at those parts which were uniformly assailed by the haranguers against theory,—that popular and misapplied watchword by which every thing like science or reason is too frequently abused and denounced. All this, however, has its uses and advantages. If the merits of Cullen had not been underrated, and if his character as an observer had not been questioned, we never would have seen the excellent defence made in the present work; and the world at large must have been ignorant of the just grounds of his celebrity. With those, indeed, conversant with all the writings of this author, such a defence was almost superfluous; for those who have not confined their study to the *First Lines* alone, could never be deluded into the persuasion that Cullen was a mere speculative framer of systems; and we believe that no one of a candid and enlightened mind ever studied the notes in the Nosological Synopsis, and the Lectures on the *Materia Medica*, without being convinced of the accurate and extensive practical knowledge of their author. But if those parts of the writings of this eminent physician were still inadequate to show his merits in their true light, we are confident that the present work will succeed in doing so in the most satisfactory and conclusive manner. It will then be seen how accurate was his power of observation, how acute his discrimination, how sound his judgment, how comprehensive his genius; and above all, how indefatigable was his diligence in collecting materials for the operations of his intellect.

William Cullen, born at Hamilton, a small town on the Clyde, about ten miles above Glasgow, was the second son of William Cullen, an attorney, who acted as factor to the Duke of Hamilton, and who possessed a small patrimonial property named Saughs (*Salices*,) in the adjoining and rather classical parish of Bothwell. After obtaining the usual rudiments of literary education at the Grammar School of Hamilton, he appears to have prosecuted his studies, classical and mathematical, in the University of Glasgow, as his name appears in the list of Dr Simson, the celebrated editor of Euclid, in the year 1727, when he must have been 17 years of age. Soon after he appears as an apprentice of Mr Paisley, a general practitioner in Glasgow, then not a very considerable city, to have been diligently occupied in acquiring the necessary elements of a medical education; and two years after, in 1729, he appears to have been regarded as sufficiently accomplished to proceed to London, with the view of obtaining professional employment. This he did in the character of surgeon to a merchant vessel, bound for the West Indies and Spanish America, in the course of which, he appears to have spent not less than six months, at the inauspicious and badly named haven of Porto-Bello. He must have returned to London after the lapse of about 18 months; for we find him first in the shop of Mr Murray, an apothecary in Henrietta Street, studying pharmacy and Materia Medica, and in the end of 1731 or beginning of 1732, in Scotland, arranging some domestic matters after the death of his father and elder brother. For two years he resided in the family of a relative, Captain Cleland of Auchinlee, in the parish of Shotts, where, with other duties, he had the charge of the health of the son of Mr Cleland, and spent all his leisure time in assiduous application to medical study. Soon after this, he appears to have gone to the village of Rothbury near Wooler, in Northumberland, and lived in the family of a dissenting clergyman,—occupied chiefly in cultivating more intimately general literature and philosophy,—a period to which he appears in future life to have occasionally reverted with great feelings of delight. Two years after this we find him in 1734-5, and the subsequent years, attending the lectures in the recently erected medical school of the University of Edinburgh, where the first Monro taught Anatomy, Dr St Clair Theory of Physic, Drs Rutherford and Innes Practice, Dr Plummer Chemistry, and Dr Alston Botany and Materia Medica; and at the same period he formed an association with a few active and diligent medical students, among others the celebrated George Cleghorn, so well known as the first who in this country gave the history of pernicious agues, in his account of the diseases of Minorca, for the purpose of discussing in weekly meetings such questions as the course of their studies, and the condition and progress of the physical sciences, at that time suggested. This association was the origin of the Medical Society of Edinburgh; an institution which comprehended several of those who afterwards rose to be the most distinguished members of the profession, and which has exercised on the progress of medical science in this country, an influence perhaps superior in many respects to that of the school itself.

In 1736, Cullen, now in his 26th year, appears to have seriously undertaken the practical duties of his profession, by commencing business as a surgeon in Hamilton, where he quickly obtained the confidence of all the principal families in that town, with that of its Ducal proprietor. An attack of alarming illness in the person of that nobleman, and which, resisting all the usual remedies under the care of Mr Cullen, required the presence of Dr John Clerk of Edinburgh, laid the foundation of an intimate and confidential friendship with that gentleman, then the principal physician in Edinburgh.

It is interesting to remark the minute and trifling circumstances on which depend much of the fate of sciences, and of the individuals by whom they are most successfully cultivated. The accidental presence of Cullen as a student in Edinburgh, we have seen, tended to give birth to an association, which, by its spirit of discussion and independent inquiry, has promoted in no common degree the progress of medical knowledge in England. To the subsequent presence of Cullen, as the general practitioner of the town of Hamilton, may be ascribed the circumstances of William Hunter and John Hunter belonging to the medical profession, and all the momentous consequences which have resulted from them. William Hunter at this time (1736,) a literary student in the University of Glasgow, was originally destined to the church, and must in all probability have become a member of that venerable profession, but for the accidental circumstance of becoming acquainted with the surgeon of Hamilton, whose conversation and example, concurring with certain scruples in the mind of young Hunter, as to some articles of faith, speedily determined the latter to embrace a mode of life, in which the energy of his mind, and his thirst for natural knowledge, would have full scope for gratification. William Hunter, after obtaining the consent of his father, began in 1737 to reside with Mr Cullen, and study medicine, and for nearly three years persevered in this pursuit. At the end of this period, he went, agreeably to a previous arrangement, first to Edinburgh for a winter, and then to London, where he formed an intimacy with Dr James Douglas, and where it is well known how rapidly he afterwards rose to eminence as a teacher of anatomy, and a physician accoucheur. The success of William Hunter, it is also known, was the principal inducement which influenced his brother, John Hunter, not only to devote his attention to medicine and surgery, but to proceed for this purpose to London, where he afterwards had the means of cultivating with such zeal and ingenuity the sciences of physiology and pathology.

From 1736 till 1744, Mr Cullen continued in Hamilton, with little other change in his mode of life, except that of marrying, in 1741, Anna, daughter of the Reverend Mr Johnstone, Minister of Kilbarchan, in the county of Renfrew. In the autumn of 1744, he removed with his family to Glasgow, where he appears first at this time to have directed his attention to the plan of teaching some branch of medical science by lectures.

At this time the University of Glasgow could not be said to possess a medical school, properly so called; and though a medical professorship was created in 1714, and one of anatomy and botany in 1719, they appear to have been merely nominal offices, without any actual efforts at the cultivation and communication of useful knowledge. The College of Edinburgh had already enjoyed for almost twenty years the advantages of a system of academical instruction approaching in extent and comprehensiveness to the establishments of the foreign universities; and it was the rising example of this institution that appears to have suggested to Cullen the idea of making some attempt to introduce into the University of Glasgow a system of real practical utility. With this object in view, he entered in 1746, into an arrangement with Dr Johnstone, the gentleman who at that time held the title and office of Professor of Medicine in the University, by which he was enabled, in the course of the ensuing winter, 1746, to deliver a course of lectures on the theory and practice of physic, lasting for six months. In these lectures, Dr Cullen appears at once to have abandoned the system of Boerhaave, whose Institutions and Aphorisms formed the general text books in the different medical schools of Europe, and to have begun by tracing a course of instruction founded on personal knowledge of the subject, and his own ideas of the sound and diseased state of the human body.

He at the same time made another innovation requiring a degree of courage scarcely inferior to that of renouncing the authority of Boerhaave,—that of being the first to deliver his lectures in the English language in preference to the Latin, which was then not only the language of the learned and scientific everywhere, but the only channel through which academical and scholastic instruction was allowed to be conveyed. This innovation appears to have excited much astonishment, and to have given rise to the absurd and foolish calumny, that the new teacher was compelled, through ignorance of the learned languages, to have recourse to the vernacular tongue, just as if the barbarous jargon in which most lectures were then composed and delivered had the smallest affinity with the style of Livy and of Tully, or as if a public teacher could not display equal learning and taste in speaking and writing his own language with fluency and precision, as in an unnatural mode and imperfect imitation of that of the ancients. From the examples of the success of his contemporaries in writing Latin in this country and on the continent, we have no reason to regret that Cullen broke through the trammels of this relic of the middle ages; and, at all events, it is clear that his pupils were likely to derive more benefit from his reasonings and conclusions being conveyed in a language with which they were familiar, than in one to which the best must have been comparative strangers. The allegation is well refuted by Dr Thomson.

The experiment now mentioned encouraged the University to co-operate in extending the system of medical education; and on Dr Cullen proposing to the Faculty of the University that lectures on chemistry should be permitted to be delivered by Mr John Carrick, at that time assistant to Dr Hamilton, Professor of Anatomy and Botany, and by himself,—the Faculty, in January 1747, in approval, ordered the sum of L. 52 to be applied to the purchase of apparatus, the erections of furnaces, and other purposes, required for a laboratory, and authorized Mr Cullen and Mr Carrick to fit up a suitable laboratory and class-room. The lectures on chemistry were begun by the latter gentleman; but indisposition preventing him from continuing them, Mr Cullen was under the necessity, after the interruption of a few days, not only of supplying the deficiency, but of delivering almost the whole course, which extended to the spring of 1748. No sooner was this winter course of lectures on chemistry finished, than Mr Cullen undertook, in conjunction with the same gentleman, to deliver during summer a course of instruction on *Materia Medica* and Botany; and in the latter, which were delivered in the Latin language, Mr Cullen was the first to adopt in this country the sexual system of classification proposed by Linnæus, and which had still to contend with numerous strong prejudices everywhere else.

In making these endeavours to establish a complete system of medical education in the University of Glasgow, it is interesting to remark the energy and ingenuity with which the mind of this active cultivator of science directed itself to every department of physical knowledge. In the department of chemistry, particularly, we find him making observations and experiments on the effects of heat and moisture, which evidently contain the germ of the great doctrine of *latent heat*, as developed afterwards by Joseph Black, at this time one of his pupils. Thus, not only did he remark the production of cold or the diminution of temperature during the solution of certain crystallized salts in water, but the remarkable production of cold during the process of evaporation by spirit of wine, ether, and other substances, and had arrived at a general conclusion to this effect. Of these facts his essay on the cold produced by evaporating fluids, in the Edinburgh Philosophical and Literary Essays, (Vol. ii.) affords satisfactory proofs; and it is only singular that a memoir which contains the germ of the most important discoveries made on this subject by Sir John Leslie, and hints at several of their applications, should have been passed over in silence by the majority of subsequent writers and experimenters. In this essay, indeed, we find that Mr Cullen had clearly proved, not only that evaporating fluids produce a greatly diminished temperature, but that this is remarkably facilitated and carried to a greater extent *in vacuo* than in the open air, where some impediment is presented to the evaporating process.

Though Mr Cullen was thus laudably and assiduously engaged in augmenting the utility and raising the character of the University of Glasgow as a medical seminary, it was merely as a permitted lecturer, and he held no public academical situation in the institution. For the latter distinction he appears to have been indebted to the patronage of Archibald, Duke of Argyle,—a nobleman who had at that time much influence in the arrangement of Scottish affairs, and to whom Mr Cullen was first introduced in August 1749. It was not, however, till fully eighteen months after, in January 1751, that Dr Cullen was formally admitted and recognized as professor of medicine, a few days before Adam Smith was appointed to the chair of Moral Philosophy. From this time till the end of 1755, Dr Cullen continued to deliver annually separate courses of lectures on chemistry, and lectures on the theory and practice of medicine. This mode of life would have been agreeable enough, had not the whole of the time spared from academical duties been occupied in an extensive and laborious, but unprofitable, practice, which in a great degree deprived him of the necessary leisure for the successful cultivation of science. In consequence of this he appears to have first, in August 1751, entertained the prospect of removing to Edinburgh. Dr Plummer, Professor of Chemistry in this city, was then so wealthy that he thought of retiring from public life in favour of Dr Elliot; and on the unexpected death of this gentleman, Lord Kaimes and some other friends of Dr Cullen were desirous to propose him as a fit assistant and successor. Considerable difficulty, however, was experienced in obtaining the consent of Dr Plummer, and the scheme was abandoned in the meantime entirely; and in 1753, when Lord Kaimes was again reviving it, he was induced to do so, from the indifferent health of one or other of the physicians in Edinburgh. In 1754 the death of Dr Dundas, a leading practitioner in Edinburgh, induced Lord Kaimes once more to advise Dr Cullen to come to Edinburgh on the inducement of delivering private courses of lectures on chemistry, and succeeding to a large proportion of the practice of Dr Dundas. Private considerations, however, appear to have dissuaded Dr Cullen from embracing this proposal; and it was only in the summer of 1755, when a shock of apoplexy, terminating in *hemiplegia*, rendered Dr Plummer incapable of continuing his lectures, that Dr Cullen began to think seriously of attempting the capital, and allowed himself to become a candidate with Dr Francis Home and Dr Black for the professorship of chemistry. Dr Home was warmly supported by his kinsman, Lord Milton, one of the Senators of the College of Justice, who then possessed considerable influence with the Patrons, the Town Council of Edinburgh. Dr Black, who, though young, had distinguished himself by his experimental researches on quicklime and magnesia, and the discovery of carbonic acid gas, was favoured by the Medical Faculty, to whom it is said he was acceptable as one who, not having been engaged in practice, was not likely to be a rival in the emoluments of their profession. Dr Cullen, on the other hand, though an able and distinguished teacher, and a man of general scientific attainments, was by his agreeable manners and engaging address very likely to secure a considerable proportion of the medical practice of the city, to which his appointment would introduce him. It affords by no means a very agreeable picture of the members of our profession to learn that considerable opposition, not altogether in a very proper way, had been made to the proposed introduction of Dr Cullen to the University of Edinburgh; and while this opposition appears to have originated chiefly among the professors, or their friends, one of the means used to prejudice Dr Cullen in the eyes of the authorities, was by representing him as a Jacobite,—a character, considering the state of political feeling in 1755, quite sufficient to injure him for life. Fortunately for Dr Cullen the independent person to whom this representation was made had penetration enough to discover its real object; and, instead of being injurious, it was really of service. By the influence of this nobleman, viz. the Duke of Argyle, the Town Council were induced to elect him on the 19th November 1755, joint Professor of Chemistry with Dr Plummer. This appointment was opposed in the meantime by the medical professors, on the ground that it was made without the consent or demission of Dr Plummer, who had resolved to protest against the admission of Dr Cullen into the University. After some time, however, in accordance with a healing measure proposed by Dr Monro *primus*, that Dr Plummer and Dr Cullen should resign together, Dr Cullen was, on the 10th March 1756, re-elected as joint professor with Dr Plummer; and on the death of the latter gentleman, which took place in July following, Dr Cullen was elected sole Professor of Chemistry—a situation which he continued to occupy for ten years.

We come now to one of the most important periods of the life of Dr Cullen; that namely, during which he was most busily and zealously engaged, in collecting and arranging the multifarious materials of that system of medical theory and practice which it was the chief business of his subsequent life to mature and enunciate in an intelligible form to the world. This consisted in delivering those clinical lectures in which he successively expounded those doctrines on the healthy and morbid actions of the living body, by which his system was then so peculiarly distinguished. This requires us to take a view slightly retrospective, in which we are greatly assisted by the work of Dr Thomson.

The practice of commenting on the cases of patients in hospitals, and the treatment employed for the removal of their disorders, originated first in Italy, the cradle of all European science, and was thence introduced into the schools of Holland, Utrecht, and Leyden by Stratten and Otho Heurnius respectively. In the beginning of the 18th century the system was assiduously and successfully continued in Leyden by Boerhaave, whose example in this respect was imitated by two of his pupils, John Rutherford of Edinburgh, and De Haen of Vienna. To the former physician, then Professor of the Practice of Physic, the Managers of the Royal Infirmary, ever anxious to promote the interests of science, had granted the privilege of delivering lectures, or making comments on the cases of patients in that hospital, so early as 1748; and the same privilege was extended the ensuing year to the other professors of medicine in the University. None of them, however, appear to have availed themselves of it till 1757, when Dr Cullen undertook to deliver clinical lectures, and was aided in the task by Drs Whytt and Monro,—an arrangement which gave additional energy and utility to the practice, and has given the Edinburgh system of clinical instruction that extent and efficiency for which it has always been distinguished.

Of the character of Dr Cullen as a clinical teacher, Dr Thomson gives a sketch equally just and interesting.

> " Dr Cullen possessed in a remarkable degree the qualifications necessary for a clinical teacher. To a minute and extensive knowledge of all the auxiliary branches of medicine, and to the great experience which he had acquired by private practice, he added a peculiar talent for the observation and accurate description of diseases, accompanied with a strong desire, and the ready power of communicating his knowledge in the most interesting manner to his pupils. During the whole of the eighteen years that he was occupied in lecturing on clinical medicine in the Royal Infimary, he bestowed much time and most uncommon pains on the proper performance of that duty. Of the notes from which he spoke his clinical lectures, those of the first five years and of the eighth year have by some accident been lost; but those of the other twelve years have been preserved. In these notes, constant reference is made to the case-books and the daily reports of his patients, showing how closely he followed, and what use he made of these in his lectures. Besides having the histories of the cases

of his clinical patients carefully drawn out by his assistants, and giving himself daily reports of their progress, and of the medicines prescribed (all of which, conformably with the practice of the hospital, were inserted into journals open for the inspection of his students), it appears from his manuscript clinical lectures that he was accustomed to write down, previously to lecturing, full notes of all those particulars respecting each individual case, the symptoms of the disease, its diagnosis, prognosis, and probable causes, and the effects produced upon it by the remedies employed, which appeared to him to require or deserve attention ; together with an account of the morbid appearances observed after death in those cases which had a fatal termination ; in short, to take notice of every circumstance which could tend in any way to awaken the observation, and to extend the practical knowledge of his students. Even his mistakes and errors in practice, as well as his skill and success, Dr Cullen never failed to render available to these purposes."—Pp. 107-108.

"Besides possessing high qualifications as a clinical lecturer, Dr Cullen had the strongest motives to employ all the powers of his mind in this new field of professional exertion. His lectures on clinical medicine afforded the most favourable opportunity that could be desired of exhibiting publicly in Edinburgh his talents as a teacher of medicine, of evincing his skill and experience as a practical physician, and of establishing by those means a claim to the chair of the practice of physic, when it should become vacant by the resignation or demise of his colleague Dr Rutherford.

"Endowed with these qualifications, and animated by these motives, Dr Cullen speedily obtained great reputation as a teacher of clinical medicine, acquired the esteem and admiration of his students, and gained by his attention and kind manners the universal confidence of his patients. His lectures were distinguished by that simplicity, ingenuity, and comprehensiveness of view, which marked at all times the philosophical turn of his mind ; and, as I have been informed by several eminent medical men who had an opportunity of attending them, and more particularly by one who acted as his clinical clerk in 1765,* were delivered with that clearness and copiousness of illustration with which in his lectures he ever instructed and delighted his auditors. It is to be regretted that the benefits of Dr Cullen's clinical experience were for many years in a great measure confined to his own students; and that, from his other engagements and pursuits, he was prevented from giving the results of this experience in a more direct manner than that in which we now possess it in his works on Nosology, Materia Medica, and the Practice of Physic. Had these results been presented to the public in the form of clinical reports, like those of his contemporary De Haen, it is impossible that the erroneous assertion so often ignorantly repeated of Dr Cullen's being merely a speculative teacher of practical medicine, could ever for a moment have been entertained by the foreign medical public. No teacher of practical medicine, as I shall have frequent occasion to shew in the course of this narrative, was ever at more pains than Dr Cullen to distinguish between well ascertained matters of fact and the assumptions and conclusions of hypothetical reasoning. In leading his students to reflect and to reason, it was his constant endeavour to teach them to observe the course of nature in diseases, to discriminate between their uniform and essential symptoms and their merely accidental combinations, and to ascertain, as far as is possible by observation and analytical reasoning, the respective influence of the remedies employed by art, and of the operations of nature in the cure of diseases."—Pp. 109—111.

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* "The late Dr John Fleming, long a Member of the Medical Board of Calcutta."

In this situation Dr Cullen very soon began to distinguish himself by those peculiar doctrines on the properties and functions of the living body, and on the production of disease, which then excited so much astonishment and opposition, and the explanation of which have attracted among the younger members of the profession so much notice. During the first nine years in which he lectured on clinical medicine as professor of chemistry, he took frequent occasion to give those general views of the functions of the living body, of the influence of the nervous system, and of the action of remedial agents, which form so conspicuous a part of his principles, and which caused so wide a difference between his mode of teaching and that of the Edinburgh school generally. The system of Boerhaave was at the time at which Cullen first studied in Edinburgh the one universally admitted; and it had retained its hold during the twenty years which elapsed between the departure of Cullen, as an advanced student prepared for the practical duties of his profession, and his return as a public teacher to Edinburgh. During this time, however, a considerable change had been made in that system, even by its founder himself. Baron Van Swieten had first found occasion to modify considerably the theory of his instructor; but these changes were not in all cases of the most valuable character. His pupil Haller with extreme assiduity, and an eager thirst for accurate knowledge, and an unbounded admiration of the Leyden professor, had set himself to examine and rectify many important points in physiology and pathology; and his researches had furnished results, which Boerhaave had the candour to adopt, in modifying very considerably some of the most conspicuous parts of his doctrine on the nature and causes of disease. Yet so firmly were most of the teachers in those days attached to the doctrines of their youth, that in no situation almost had the changes made by Boerhaave himself been adopted. The originality of the mind of Cullen was the preventive against this servile and torpid state of the intellect. In his retired situation as a general practitioner in Hamilton, he had never ceased to read, reflect, and observe; and when among other works, he perused the ingenious treatise of Baglivi, *de Fibra Motrice et Morbosa,* and afterwards began to study the writings of Hoffmann, his mind entered on a new train of inquiry, and he quickly perceived the advantage which the theory of living properties has over the mechanical and chemical, in explaining the laws and actions of animal bodies, and the derangements which they are liable to undergo. The views then laid open Dr Cullen elaborated, rectified, and confirmed by further reflection and observation, first in Glasgow, and latterly in the Infirmary of Edinburgh ; and by successive steps he came to form opinions and views of the nature of the disease, which he afterwards discovered in promulgating them in the course of teaching, were peculiar to himself and new to his auditors. In these views, however, it is remarkable that Cullen had only been proceeding in the same route with several of those inquirers whose researches tended at once to improve the Boerhaavian doctrines, and to accelerate their downfal ; and had in some respects not advanced quite so far in the way of innovation and revolution. It is most important, indeed, to remark on this topic, that Cullen was already preceded in this career of innovation by Whytt, whose experiments and researches on the nervous system and its influence tended so powerfully to rectify the sciences of physiology and pathology ; and that Haller had actually completed by this time all those laborious inquiries by which he was enabled at once to rectify the Boerhaavian doctrines, and to give the world that collection of accurate facts and observations, sound arguments, and just deductions, which form the basis of modern physiology.

This will require us to pause a little in the history of the doctrines of Cullen, while we take a short view of the state of medical knowledge in this country, and on the continent, at the time at which Cullen must be supposed to have began to observe, reflect, and reason.

In the first place, it must be observed, that, though the eclectic system of Boerhaave, embracing as it did mechanical, chemical, and vital principles, was the one then principally prevalent among teachers and practical physicians, it was by no means so exclusively such that no other doctrines were allowed to prevail. Not only were there several intelligent physicians in this country attached more or less to the doctrines of Stahl, but many intelligent members of the profession quite aware, it would appear, of the difficulty of explaining the actions of the animal body, and the laws by which they were regulated on mechanical or chemical principles, or on the idea of an over-ruling soul, had adopted a species of modified zoo-dynamicism, in which they admitted the existence of peculiar properties, observing, in the demonstration of their powers, certain laws widely different from those of mechanical or chemical actions. This species of heresy from the established medical opinions of the day may be traced in part to the influence of the writings of Francis Glisson, Professor of Medicine at Cambridge, who had already, in his account of the anatomical structure of the stomach and intestines, given very distinct ideas of the irritable powers of the muscular fibres under the proper application of stimuli. Independent, however, of the opinions of Glisson, we find that George Cheyne, though an avowed disciple of Stahl, in so far as he allowed the over-ruling influence of the soul, was, however, disposed to zoo-dynamic opinions in explaining the minute and subordinate process of the animal organs. The ingenious speculations of Porterfield, also, on the cause of the motions of the eyes, were founded more on Stahlian than Boerhaavian principles, and partook in a large proportion of that independent mode of inquiry which could be said to belong to no preceptor whatever. Henry Joseph Rega, also of Louvain, by giving in 1721 a popular view of the sympathies between the stomach and other parts, on the zoo-dynamic principles of Hoffmann, contributed not only to make known the doctrine of that physician, but to give a new turn to pathological observation. Innovations of this description, and we can specify only a few, must have been highly instrumental in preparing the minds of physicians for a considerable change in the character of their theoretical principles.

The circumstance, however, which contributed, we conceive, more directly and more powerfully than all others to the subversion of the Boerhaavian doctrines, was the valuable researches of Haller, one of the disciples of Boerhaave ; and perhaps it may be justly said, that, for the whole system of modern physiology, and most of the important peculiarities of its pathology, we are indebted to the exertions of Haller and Whytt, and the investigations to which the controversies between these two acute and accomplished philosophers gave rise.

Already in 1739, when Cullen, not quite thirty years of age, had been only three years settled as a general practitioner in Hamilton, had Haller, in the first edition of his Notes on the Physiological Institutions of Boerhaave, expressed his opinion of the peculiar characters of irritability as a property of muscular fibres ; and four years after, he repeated the opinion in a subsequent part of the same commentaries, which appear, from the dedication of that learned work to Werlhof, the friend and fellow pupil of the commentator, to have received their final completion in 1744. From this period, but especially after 1746, the attention of Haller appears to have been directed closely and steadily to the investigation of the properties of the living solid, as it was then named; and the distinction of the sensible and irritable from the insensible and inirritable tissues of the animal body; and when, in 1747, he first published, in the form of mere outlines, that treatise which afterwards formed the basis of his Elements, he distinguished the forces of the muscular fibre into *dead*, *integrant*, and *nervous*,—understanding by the second that force which he afterwards denominated the *vis insita* or *vis propria*, or irritability; and by the third a property somewhat hypothetical, which he conceived to be derived from the nerves.

With the view of obtaining more accurate information on these topics, Haller now entered on a series of experiments on living animals; and, in addition to many which he had performed so early as 1746, he had, from the commencement of the year 1750, made observations and performed experiments on 190 living animals; and the results of these experiments he detailed in April 1752 to the Gottingen Academy, in an interesting dissertation, which was published in the Transactions of that society the following year. In this dissertation we find the whole of the essential characters of the doctrine of Haller regarding sensible and insensible, irritable and inirritable, tissues, clearly laid down and demonstrated, with a weight of experimental proof, and a force of reasoning quite irresistible. This memoir was afterwards translated into French by Tissot, and, with various additions and improvements, published in that language at Lausanne in 1756; and we may recommend the perusal of the concluding part of this edition of the Second Essay, from page 86 to page 91, (one of the most essential passages is given by Dr Thomson at p. 234,) to show how clearly and decidedly Haller had arrived at conclusions which went directly to overturn many of the most essential and characteristic doctrines of his preceptors. About the same period, or from 1749 to 1757, the friends and pupils of Haller, viz. Zinn, Zimmermann, Oeder, Castel, Tosetti, Housset, and Fontana, performed different series of experiments, more or less complete and elaborate, all tending to the same purpose, and all having the effect of impressing on the minds of physicians the peculiar properties of the living solid, the characteristic inherent power of muscular fibre, and the great influence of the nervous system on the maintenance of health and the production of disease. These doctrines must have been well known over Europe, and could not fail to have reached even the medical schools of Scotland. That they did so, is evident from the facts regarding the controversy of Haller and Whytt, to which we are presently to advert.

This acute author, who was then Professor of the Institutes in the University of Edinburgh, began his celebrated Essay on the Vital and Involuntary Motions in the year 1744, and published it in its complete shape in the month of October 1751, some time after Dr Cullen was admitted into the Medical Faculty of the University of Glasgow. In this able specimen of physiological inquiry and experiment, Dr Whytt had not only refuted, by the most conclusive arguments, the doctrine which traces these motions to material causes, and also the hypothesis of Stahl, which ascribes them to the direct influence of the soul, but he had demonstrated in the clearest manner, that they depended on certain properties, irritable or sentient, or both, which belong to the living fibres of which the animal organs consist, and that the whole of these properties, though not dependent on the nervous system exclusively, were remarkably influenced by the nervous system in the regularity and steadiness of the actions to which they gave rise. In 1755, before Cullen was yet in the city or the University of Edinburgh, Whytt had laid before the world his Essay on *the Causes which promote the Circulation in the Minute Vessels*, and the celebrated *Observations on the Sensibility and Irritability of the parts of Men and Animals*, occasioned, as he informs us, by the treatise of Baron Haller on the same subject, which had appeared in the early part of the same year. In the first of these essays not only had Dr Whytt considered in the fullest and most accurate manner the influence of the several agents which are concerned in the minute and organic motions of animal bodies, but of the nature and causes of those motions, and of the modifications which they undergo, he had given views which, if fully pursued to their consequences, must have completely overturned the whole of the mechanical hypothesis and chemico-humoral pathology of Boerhaave. In this essay also we find several unanswerable arguments against the mechanical theories of Keill, Pitcairn, and others of that school, and a long train of observations and reflections, to show that these motions arise from, and are in proportion to, the properties of those vessels which Whytt was obliged to denominate irritable and sentient. We observe also several accurate observations on the application of these views to the theory of inflammation, which, he justly maintains, never arises from obstruction alone, or a mechanical cause, but is always to be traced to irritation, that is to say, to some change in the vital constitution of the minute vessels. In the latter of these essays, though we cannot agree with the ingenious author in maintaining, in opposition to Haller, the sensibility of tendons, *aponeuroses*, ligaments, articular capsules, periosteum, and the fibrous and fibro-serous tissues generally, yet every one must admit that he has arranged, in the most lucid and instructive order, an immense number of valuable facts illustrative of the properties of irritability and sensibility in the different elementary tissues of the animal body. He is certainly too loose in allowing nerves to tendons, ligament, *dura mater*, and the serous membranes, in none of which, according to the researches of the best anatomists, have nerves hitherto been discovered ; and he unnecessarily and gratuitously connects the sensation of pain with the existence of nervous filaments ; but by the facts which he adduces, he clearly proves the existence of a certain degree of sensibility, which corresponds apparently to what Reil and some other modern physiologists have denominated *coenaesthesis*, or general sensation. In the second part, consisting of *observations on irritability*, this acute reasoner gives a most accurate view of the facts illustrative of that property, afterwards denominated by Bichat *organic insensible contractility*, and draws several very just distinctions between irritability and muscular contractility.

These doctrines and others in the writings of this accurate observer and acute reasoner were by no means accordant with the principles of the Boerhaavian physiology ; and it seems singular, that, in the very school in which the text-books of the Leyden professor were still used to teach the elements of the practice of physic, the theory should have been taught on principles so different, yet without clamour or opposition ; while the moment that Cullen began in his clinical lectures to declare opinions at variance with the Boerhaavian creed, an outcry was raised against him as a rash innovator and a wild speculatist ; so violent that he was under the necessity of making frequent defences of his principles, and affecting a greater degree of moderation than he really felt. That this clamour could not have resulted from the mere novelty and originality of the doctrines is, we think, abundantly evident ; for we conceive that it most clearly results from the comparison of the doctrines of Haller and Whytt with those of Cullen, that the latter did not carry his views, either in novelty or originality, any further than the professor of Gottingen, or his own colleague in Edinburgh. From the whole of the circumstances now recorded, it appears to us that the assertion, that Cullen assailed and overturned the Boerhaavian system of medicine, affords an entirely erroneous view of the matter, and that the system of that learned and ingenious eclectic was already tottering on its foundation from a variety of causes. The spirit of investigation was then universal ; and gave rise to a series of researches, which, supposing Cullen had not existed, must have involved the downfal of that theory at no remote period. Let it not be imagined, nevertheless, that we mention these facts to impair the merits and underrate the services of Cullen, whose doctrines, doubtless, accelerated the catastrophe, and were highly instrumental in substituting a better system in place of that of the Leyden professor. We shall very quickly show wherein the true merits of Cullen consisted, and satisfy our readers that these are sufficiently great, without having to answer for the demolition of the system of Boerhaave. We shall merely advert briefly to one or two epochs in the life of the Edinburgh Professor.

Dr Cullen proceeded in his duties as professor of chemistry, and lecturer on clinical medicine at the Infirmary for about ten years without any remarkable incident, but evidently attracting more attention as a clinico-medical lecturer than as a chemical teacher. This quality, indeed, was evidently his principal talent; and we think it appears clearly, that he not only displayed remarkable acuteness and sagacity as a medical practitioner and reasoner, but that he possessed a peculiar and unrivalled faculty, in directing all his knowledge of the physical and physiogical sciences to the single object of the rational and successful treatment of disease. In 1760, an occurrence took place which gave him an opportunity at once of showing this faculty in a singular degree, and of displaying to great advantage the extent and variety of his medical knowledge, and his singular facility of communicating it to others. Dr Alston, the Professor of *Materia Medica*, died at the age of 77, on the 22d November 1760, shortly after he had commenced his lectures for the season; and as no one was appointed, or appeared to supply his place, the students presented to Dr Cullen a petition requesting him to undertake this duty. He accordingly, with the sanction of the Town Council, commenced in the beginning of January 1761, a course of lectures on this subject, which, in point of rational theory and sound practical views, may be justly said to constitute the greatest era in that branch of medical science in the course of the 18th century; and which, when subsequently published, formed the basis of all the modern therapeutical doctrines. In consequence of the appointment of Dr John Hope, on the 13th April 1761, to be Professor of Botany and *Materia Medica*, Dr Cullen did not deliver any subsequent course of lectures on the *Materia Medica*. Such was the impression made, however, and the interest excited by the originality of his therapeutical principles, the selection of the subjects for inquiry and discussion, the proscription and rejection of inert remedies and superstitious or foolish observances, and the general methodical and rational form that was given to the whole subject, that after these lectures had circulated among numerous individual students, in the shape of manuscript notes for years, an imperfect copy of them was at length published in London, in 1771, about ten years after the date of their delivery. The publication was surreptitious, and at first anonymous; but, by the circumstance of the high name of the reputed author, and the intrinsic merit of the theoretical doctrines and practical precepts, so superior to any thing hitherto given to the profession, in a short time a considerable part of the impression was sold, the edition was republished in Dublin and Edinburgh, and translations were made into several of the languages of Europe. Of the merits of this work, however, we shall speak more particularly in their proper place. At present, we revert to the chronological course of events.

The minute and accurate acquaintance with the nature of disease and its best mode of treatment, which Dr Cullen displayed in his clinical courses, and that of *Materia Medica*, had not only procured him extensive practice as an ordinary and consulting physician, but so much reputation as a learned and accomplished teacher, that in the advanced years and declining health of Dr Rutherford, he was very generally regarded as the most proper person to succeed that gentleman as Professor of the Practice of Physic. For the accomplishment of this purpose, it was unlucky that it could be effected only by inducing Dr Rutherford to resign; and though he was really desirous to retire from academical duty, he is stated by Dr Thomson to have imbibed prejudices which prevented him from doing so in favour of Dr Cullen. On the cause of these prejudices we have no means in the present work of obtaining any light; though in the language used in one of the letters of Dr Hunter, political reasons are alluded to as the impediment. It appears, at all events, that a good deal of the usual misrepresentation and false colouring of party was employed on the occasion; and that, whether the object was to exclude Dr Cullen from the situation, to which, it must be allowed, his services and talents showed he was well fitted, or to admit another candidate, these instruments were employed with the usual temporary success.

During the progress of these negociations in 1765, Dr John Gregory, who had for several years held the office of Professor of Physic in King's College, Aberdeen, but who, though a gentleman of acknowledged talent, had not in that capacity occasion to deliver lectures on medicine, was invited by his friends to offer himself as a candidate for the practical chair of Edinburgh; and as the pretensions of this candidate were favoured by Dr Rutherford, the friends of Dr Cullen endeavoured to prevent the new arrangement by an appeal to the public, in which they represented the various successful efforts which Dr Cullen had made to advance the progress of medical science, and especially his celebrity as a practical teacher, as evinced by the success of his clinical lectures, as constituting very strong claims to preference over every other less distinguished candidate. This appeal, which gave rise to various replies and comments, distinguished for coarse personal allusions and vulgar sarcasm, was in the meantime totally unavailing; and after the matter was protracted so long and in such a manner that Dr Cullen had lost all hope of succeeding to the chair, Dr Rutherford presented his resignation on the 12th of February 1766,—more than a year after the scheme had been first proposed; and on the same day the Honourable Patrons elected Dr John Gregory as his successor.

To this appointment it was impossible, so far as the choice of the professor was concerned, to make any rational objection. The successful candidate, though not perhaps so old in the practice of his profession, (he was forty-two years of age, and had been about seventeen years in the professed practice of medicine,) was still a physician of great learning and experience, and unquestionable talent, and had already distinguished himself in all the literary institutions of the day, and above all, by his *Comparative View of the State and Faculties of Man with those of the Animal World*,—a work which, though not entirely original, exhibits a most intimate and extensive knowledge of the physical and moral constitution of our nature, and which presents a happy talent of applying philosophical views in the most simple and interesting manner, to elucidate the best mode of improving the human character in the different states of society. An individual so accomplished, and whose writings still breathe so much philanthropy and good taste, could not fail to be a useful teacher; and whatever might be said regarding the claims of Dr Cullen, it is impossible to deny that the University could lose nothing by the election of Dr Gregory. The transaction, nevertheless, appears to have been regarded as one which was either in some sense conditional, or temporary, that is, intended to remove the personal objections which Dr Rutherford appears to have entertained against Dr Cullen, by electing Dr Gregory in the meantime, and then, when it was possible to provide for him otherwise, to elect Dr Cullen. At all events, when the death of Dr Whytt on the 15th April 1766, about two months after the election of Dr Gregory, caused a vacancy in the theoretical chair, we find Lord Kaimes, in a letter of the 18th, stating that he "was assured by Millar, that the purpose in choosing Dr Gregory was to remove the obstruction made to Dr Cullen by Dr Rutherford; and that the chair was to be Dr Cullen's as soon as Dr Gregory should be otherwise provided for;" that is, we presume, by electing Dr Gregory to the theoretical chair. The scheme, however, appears not to have been understood in this light; and Dr Gregory remained Professor of the Practice of Physic. The disappointment of the friends of Dr Cullen, and many of the students at this arrangement, appears to have been extreme; and the chagrin of Dr Cullen especially, was so great, that the death of Dr Whytt, and the vacancy in the theoretical chair, appear to have produced no wish on his part to abandon the professorship of chemistry. It was, of the utmost consequence, however, to obtain for the theoretical chair a physician of learning, talent, and practical experience in his profession ; and as Dr Gregory showed no wish to become a candidate for the office, four of his colleagues, the two Drs Monro, Dr Hope, and Mr Young, addressed to Dr Cullen a letter, on the 24th April 1766, requesting him to become candidate for the chair of the Theory of Medicine ; and, as it was evident that the experimental part of his chemical duties were at once less compatible with hospital practice, than if he had held any other chair more purely medical, they concluded by entreating him, in the event of his being elected to the theoretical chair, to bestow as much time on the clinical lectures as his other professional avocations would admit. This plan was evidently attended with the additional advantage of opening the chemical chair to Dr Black,—a gentleman, who, though still young, had given the most unequivocal proofs of great genius, and a peculiar aptitude for chemical investigation.

In the meantime, the students of medicine had not lost hopes of seeing realized the arrangement originally planned, of inducing Dr Gregory to resign the practical chair in favour of Dr Cullen, who they conceived, without derogating from the merits of Dr Gregory, to be most peculiarly fitted for that office; and with this view, they presented to the Honourable Patrons, an address, signed by one hundred and sixty individuals, humbly expressing their opinion, " that the reputation of the University and Magistrates, the good of the city, and their own improvement, would be eminently consulted by engaging Dr Gregory to relinquish the Professorship of Practice for that of the Theory of Medicine, by appointing Dr Cullen to the Practical chair, and by electing Dr Black Professor of Chemistry." In the arrangement thus proposed there was much plausibility, and not a little show of reason ; but it was at once unnatural and unreasonable to expect that Dr Gregory should resign the Practical chair, which, even in these days, was considered as more important than the theoretical, after he had been fairly elected to it, and make, what he must have regarded as, a sacrifice of his interests, merely to gratify Dr Cullen and his friends. All the arguments accordingly used on this occasion appear to have made no impression on him ; he retained the chair to which he had been elected ; and Dr Cullen at length consented to accept of the Theoretical chair, to which he was accordingly appointed on the 1st November 1766.

One false step, however, invariably leads to another. The Town Council had committed one mistake, in being influenced by Dr Rutherford, in not electing Dr Cullen to the Practical chair ; and to rectify and compensate for this, it was indispensible to make a second. During the progress of those negociations, the object of which was to persuade Dr Gregory to resign the practical for the theoretical chair, when this was found impracticable, another plan as a *pis-aller* was suggested by some of the Professors, it was said, and strongly recommended by an address from 151 students. This consisted in appointing Dr Cullen and Dr Gregory joint Professors of the Theory and Practice of Medicine, while Dr Black should be elected to the chair of chemistry. This plan was not at the time matured, and appears to have received little serious attention; for Dr Gregory delivered three courses of lectures on the practice during the winter sessions of 1766-7, 67-8, 68-9.

In the summer of 1768, however, the students appear again to have revived their scheme, for at this time Dr Cullen received several letters subscribed by a number of gentlemen, principally his own pupils, entreating him to deliver a course of lectures on the Practice of Physic during the summer. After obtaining the consent of Dr Gregory to this proceeding, Dr Cullen agreed to deliver a course beginning on the first of June, and ending on or soon after the 1st of September. Dr Cullen, however, took care in this matter to explain to the gentlemen who had presented the request, that the course thus proposed could be neither so full nor so elementary as the lectures of Dr Gregory; that it was intended neither to supersede nor to supply the place of Dr Gregory's course; and that it should embrace subjects chiefly which either were not considered at all in the course of his colleague, or on which Dr Cullen entertained new and peculiar or uncommon views. In accordance with these principles, Dr Cullen made a rule, to which he religiously adhered,—not to admit to the course of lectures thus announced, which was regarded as strictly private, any but those who had been pupils of Dr Gregory. The reason of this restriction is too obvious to require explanation. The scheme of alternate teaching was, though still under consideration, not yet brought to any maturity.

At length, however, so many efforts were made by the students to enjoy the advantage of Dr Cullen's instructions as a teacher of the practical course, that in the beginning of 1769, Dr Cullen, having at length obtained the consent of Dr Gregory, and the approbation of the other members of the Faculty, presented to the Patrons a petition, in which, after stating the inconveniences resulting from the Theory and the Practice being taught by different professors, and the advantages which would result, if the same persons taught both branches, when the students would have an opportunity of hearing complete courses of both, he requested them to appoint the petitioner, Dr Cullen, and Dr John Gregory, joint Professors of the Theory and Practice of Medicine. The Patrons, accordingly, having considered this petition, did, on the 12th April, elect these gentlemen joint Professors of the Theory and Practice, with the condition, that each should teach alternately these branches of medical knowledge; and that this arrangement should continue during the lives and incumbencies of Dr Gregory and Dr Cullen; but that on the death or resignation of either the other professor should have it in his option to continue the arrangement then made, or confine himself to the practical chair alone.

In this manner, therefore, was this singular and complicated transaction completed, in which, doubtless, the great object was to enable Dr Cullen to lecture on the subject, for which perhaps he had most genius, which certainly he had cultivated with singular assiduity, and in which, perhaps, his long experience and varied learning, as well as his natural acuteness and intelligence, had the best chance of being successfully displayed and advantageously employed. Whatever arguments might be, or were actually advanced in its favour at the time, it is impossible to deny that, for a university, in which the system of education was intended to be complete, and where each teacher was to confine himself to his own department, the arrangement was perplexed and irregular in the extreme; and the same reasons which were advanced in its favour, might be adduced to defend the conjunction and alternation, not merely of two chairs, but of the whole academical establishment. It was but an imperfect expedient to rectify an error originally committed by the Honourable Patrons, when under the influence of Dr Rutherford, and those who opposed Dr Cullen. How it would have done in practice it is difficult to say; for it was terminated by a very melancholy and unexpected circumstance, before it had been tried above four seasons. Dr Gregory died suddenly on the 10th of February 1773, at the early age of 48, exactly at a time when, from a mind so cultivated, an intellect so acute, and a judgment so sound and matured, it was reasonable to expect the greatest advantages, not only to the University of Edinburgh, but to medical science generally. Dr Cullen then became sole Professor of the Practice of Physic.

In the history of these transactions, we have been obliged to be unavoidably somewhat minute and more prolix than the subject would warrant, from the apprehension, that, by any unseasonable brevity, we might inconsciously be guilty of misrepresentation. The narrative which we have now given is condensed chiefly from the volume before us, with some rectification and adjustment as to dates, and with the omission of those matters, which, though not unimportant, are nevertheless not altogether essential. We are now prepared to advert shortly to the scientific character and writings of Dr Cullen ; and though the train of incidents in his life has already compelled us to anticipate somewhat, we shall endeavour, without observing what may be called the chronological order of his literary labours and scentific opinions, to take a view of the peculiar features of his medical doctrines, whether communicated by lecture or publication.

The leading characters of the intellect of William Cullen were unquestionably great energy and soundness of judgment, much originality, accuracy in thinking and observing, and a power almost unrivalled of concentrating information on all points, and making it illustrate the grand subject of medical practice. Cullen was no anatomist ; and in physiology he was, it must be admitted, infinitely inferior either to Haller or to Whytt. He had neither the profound and accurate knowledge of the structure of the animal body, nor the intimate acquaintance with the history of facts, arguments, opinions, and doctrines possessed by the former ; nor was he equal to the latter in his habits of experimental investigation, and acute and ingenious reasoning. In three circumstances, however, he was decidedly superior to each of these eminent physiologists ; first, in the penetration and sagacity with which he could investigate and illustrate the psychological branches of physiological science ; secondly, in his power of distinguishing and selecting, amidst an immense mass of heterogeneous materials, those facts only which are regular, constant, and universal, and rejecting those which are frivolous or partial, or imperfectly ascertained ; and thirdly, in the readiness with which he could apply the results obtained by his predecessors, contemporaries, and pupils, to the rectification, simplification, and general improvement of medical theory and practice. His superiority in the former capacity is, we conceive, most indisputably proved to the satisfaction of all candid readers, in his beautiful and luminous disquisitions on the state of the mind in the various forms of insanity and in several nervous diseases, in his interesting speculations on sleep, in those on the influence of custom both on our physical and moral powers, and in all those speculations in his Institutions of Medicine, regarding the influence of mental impressions. His merits in the second character appear to most advantage in the theoretical parts of his First Lines, and, above all, in the clearness and method of his therapeutical principles in the lectures on the *Materia Medica.* His faculty of applying the discoveries and illustrations of his predecessors and contemporaries, is illustrated by the whole tenor of his lectures and writings, but especially in his application of the physiological and pathological doctrines, then recently proposed, to the illustration and simplification of medical practice.

The system of physiology which Dr Cullen taught was above all of the utmost utility to the rising race of physicians. In laying down the elementary principles of this science, he began by removing a vulgar prejudice regarding the terms *theory* of medicine and *physiology*, by which it has been usually designated. "The Practice of Physic," says Dr Cullen, "is the art applied to particular diseases and cases; but before considering this art in its application to particular diseases, certain general doctrines are necessary to be premised, which we call Institutions of Medicine. Some are pleased to call our present course the Theory of Physic. With regard to the common notion affixed to the term theory, I must say, that I mean to deliver nothing in this course but what is applicable to the cure of diseases, which is the ultimate end of all our studies: what we are to deliver in this course will be applicable to practice."—"When gentlemen call this a course of theory, if they mean by that term a deduction of reasoning, and that founded upon hypothesis, we refuse the application; but if by theory they mean the general doctrines of the art of medicine founded upon experience and observation, I allow you to call this the theory of physic."—"My general doctrines are to be so many general facts." On this subject, also, there are some very pertinent and judicious remarks in the History of Medicine, p. 399 and 402, and those on the Method of Study, p. 417-419, (Works, Vol. i.) which we recommend to the serious perusal of all those who decry theory, and extol observation and experience.

In this explanation of the term *theory*, Dr Cullen only adopted the same views which have been entertained by Sir Isaac Newton, D'Alembert, Adam Smith, and Boscovich, and more recently by La Place, Playfair, and Dugald Stewart, and all those enlightened reasoners and accurate observers by whom science has been most industriously and successfully cultivated. These philosophers proceeded on the principle that theory was merely a generalization of well-ascertained facts; and as no facts can admit of generalization except those which are either universally or very generally true, it must follow that the term theory, instead of meaning what was imaginary or erroneous, ought to comprise only what is strictly true. In this respect it differs widely from hypothesis, which is merely an imaginary supposition or conjecture, devised to explain certain phenomena, and which, however well it may explain those phenomena to which it has been adapted, is totally unfit for any other purpose; and it differs not less from a speculation, which in general means some fanciful proposition which is not necessarily connected either with fact or practicability. A hypothesis, is, in short, of partial application, while a theory, properly so called, must be general. A theory also may be regarded as merely a common chain, by which a great number and variety of facts are naturally connected. It doubtless has often happened, and probably will still happen, from the term being used by persons who do not comprehend its just import, that the term theory is applied improperly to a mere hypothesis or a string of fanciful conjectures; but this constitutes no reasonable argument or valid objection against the legitimate use of the term in its restricted and precise signification. This distinction, which Dr Cullen was so anxious to explain and impress on his pupils, has been so clearly and forcibly stated by his philosophical colleague much about the same time, that it is surprising that so many misconceptions should have prevailed on the subject. "The world," says Dr John Gregory, in a passage which cannot be too frequently studied, "has been so long abused by ill-founded, though sometimes plausible, hypotheses, assuming the name of Theories, that a general prejudice now prevails against the very expression, *Theory of Physic*, as if it contained nothing but useless disquisitions, a display of arrangement, subtle distinctions chiefly nominal, and an establishment of general principles, many of them false, and others so vague or ambiguous as to be incapable of any useful application. But this is a false representation of the Theory or Institutions of Medicine. These ought to contain every fact tending to illustrate the animal economy, either in its sound or diseased state, and every fact that may be useful to a physician, in forming indications of cure. These facts ought to be accurately arranged, so as either to establish general principles, or to point at them, especially at such as lead to practice. In this view, the Institutions became a natural preliminary to the Practice of Physic."*

These views are equally applicable to the term physiology, which has been too often unjustly regarded as a mere tissue of fanciful speculations. From this imputation, however, it was first successfully rescued by Haller, in his notes on the Institutions of Boerhaave, and afterwards more completely in the *Primæ Lineæ* and *Elementa*. He there showed that it was possible to distinguish fact from opinion and conjecture, well ascertained facts from those which were erroneous or imperfect, and facts of extensive, constant, and universal application from those which were only partial, casual, or irregular.

In following in this field of investigation the track of the physiologist of Berne, Cullen displayed, with great admiration of the assiduity, learning, and ingenuity of Haller, perhaps a more metaphysical turn, more critical nicety and scepticism in the admission of facts, and more just discrimination in the formation of his deductions.

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* Lectures on the Duties and Qualifications of a Physician, by John Gregory, M. D. &c. Lecture iii.

Bold, original, and unfettered in his mode of thinking, Cullen never admitted any hypothesis or doctrine, however plausible in appearance, and however great were the names by which it was supported, without the most rigid scrutiny of all its parts. A degree of scepticism perfectly constitutional led him to question all facts which he had not himself verified, or which were not confirmed by the testimony of several competent observers; and even in this case he often expressed himself in terms of doubt. While he was thus strict in the admission of materials for premises, his precision in the use of language, and his selection and methodical arrangement of arguments, rendered his reasoning extremely conclusive and irresistible, on subjects in which he knew the ground to be sure. In all other situations he candidly avowed his ignorance, and was not ashamed to acknowledge imperfections, which could only be removed by future observation and inquiry.

Proceeding on these principles, Cullen gave a course of Institutions of Medicine, in which his chief object was to communicate sound notions of the animal economy, while he laboured to distinguish what was positive, from what was uncertain, and what was important, from what was frivolous, to inspire the spirit of investigation, to ascertain every point indisputably, and to discard, or at least to specify and separate, everything on which information was defective and erroneous. In this manner, he may be regarded not only as the importer of all the valuable doctrines of the foreign physiologists, but as the framer of a system of physiological and pathological principles more suited to the purposes of the medical practitioner than any heretofore proposed. This system, indeed, was, by its very nature, incomplete on many topics; but, unlike the fallacious and apparently perfect systems of others, its chasms and breaches were so many marks to guide the student in his future train of inquiry. Though the whole of this assemblage of doctrines were distinguished by the peculiar genius, originality, and acuteness of Cullen, that division relating to the doctrines on the functions and properties of the nervous system was certainly most novel, and perhaps most important in its practical applications. Of this division, therefore, Dr Thomson has given a very clear and methodical exposition in the volume before us, arranged under the following six heads. 1st, The nervous system considered as the connecting medium between the soul and body, or the immaterial and the material parts of man; 2*d*, The nervous system considered as the organ of sensation; 3*d*, As the organ of our intellectual operations, memory and judgment; 4th, As the organ of the voluntary and involuntary, mixed, and sympathetic motions of the animal economy; 5th, Of the different conditions of the nervous system in the states of sleeping and waking, and the doctrine of excitement and collapse; and 6th, and lastly, The effects of custom upon our corporeal and mental functions.

Under the first head, Dr Cullen was most anxious to guard himself against the charge of materialism;—an imputation which has been often "rashly and ignorantly preferred against those," says Dr Thomson, "who have been engaged in tracing the order of succession of the material and mental phenomena of the animal economy, and the reciprocal influences established by nature between them." This doctrine consists, as is well known, in referring the whole of the intellectual operations and moral qualities to the material constitution, or organization of the frame; but Dr Cullen very properly observes, that, in addition to the arguments by which Dr Whytt has overturned this hypothesis, the association of ideas, a very fundamental part of all our intellectual operations, cannot be explained on any supposed organization of matter. Admitting, however, that the brain is the organ of the soul, and that no intellectual operations can be performed when that organ is not in a healthy state, he denies the immediate influence of this immaterial part in the several motions and actions of the living body, because we have no proof of its interposition; and he further justly maintains, that such a doctrine cannot be useful, and may be injurious in medical practice.

It is impossible in this place to give any thing like a full analysis of what is already an analytical exposition and commentary on the opinions of this ingenious philosopher; but we must be permitted to subjoin the account given by Dr Thomson of that part of the theory of Dr Cullen which has been always supposed since his time, to constitute one of the most remarkable features of his doctrine, and which has been designated by the name of the *Theory of Excitement.*

"Boerhaave and Haller," says Dr Thomson, "with most preceding physiologists, in adopting the hypothesis of Animal spirits, imagined that, during the waking state, these spirits are gradually exhausted, whilst, during sleep, on the other hand, they are recruited; and that these alternate states of the exhaustion and accumulation of the animal spirits act as the immediate causes of the states of Sleeping and Waking. 'This,' Dr Cullen observes, 'has been the opinion of the learned and of the vulgar; it has been the most common one in every System of Physic, with very few exceptions, but it is embarrassed with many difficulties; there are many circumstances in the states of Sleeping and Waking, that will not correspond with it.' In rejecting this hypothesis, Dr Cullen seems to have been led by the great deference which he entertained for the genius of Sir Isaac Newton, to conceive a partiality for the explanation of the phenomena of Sense and Motion, by the operation of an ethereal medium, which Sir Isaac had suggested; and he endeavoured, accordingly, to account for the alternate exercise and suspension of sense and motion which occur in the states of sleeping and waking, by an increased or diminished mobility, or a more or less *excited* state of this medium. But, in giving this explanation, he regarded it as hypothetical, and wished it to be received as such by his students; for, in speaking of it, he says—

" 'I take it for granted, that when you consider the weakness and manifest mistakes of any other hypothesis, you will readily, with me, think that the condition of the nerves, fitting them for the communication of motion, consists in some state of the matter of the nervous fluid itself, and of its having more or less mobility; in some cases being capable of being moved with more ease and vigour, while in other cases it is unfit for either. Now, I say, merely to avoid long expressions, I shall choose shorter ones, and shall speak of the moveable state of the nervous fluid, or of that condition of the nervous system which fits it for the communication of motion, under the term of its *Excitement*, and a deficiency or less degree of this I shall call its *Collapse*. Now, you must merely consider these as terms employed for what I take to be matters of fact, the increased or diminished force of the animal power or energy of the brain, and not as importing matters of theory, or as expressing any thing with regard to the nature of the nervous fluid, or wherein these different states of the nervous system consist. Whatever hypotheses I may have fancied to myself, I consider these as hypotheses still, and dare not trust you with them, unless you take them as they pass in my mind, and be very certain never to apply them in particular cases.'

" In the explanation of his doctrine of *Excitement* and *Collapse*, that is, of the increased and diminished Energy of the Brain, Dr Cullen assumed the waking state of a man in health as the standard point from which the higher and lower degrees of excitement are to be estimated, though he acknowledges that there are difficulties in fixing these degrees.

" 'I have been a little at a loss,' he observes, 'in the application of the terms of Excitement and Collapse. There is nothing more manifest than that the degree of excitement is very different upon different occasions; if we take the lowest, every higher degree than that must be called a degree of excitement; and if we take the highest degrees, and consider the lower degrees that may take place while life still subsists, every lower may be called a degree of collapse. The same ambiguity occurs with regard to the terms of Heat and Cold, which may be absolutely applied to the same individual state of bodies; and philosophers have not yet agreed where they should begin with applying the terms Heat and Cold; and so it may be with regard to the terms Excitement and Collapse. In saying that, in the ordinary state of waking men of health, the excitement is total with respect to the functions of the brain, but readily admits of diminution so as to produce the state of sleep, I mean,' continues Dr Cullen, ' to settle the matter a little more exactly. I would call those states, states of excitement, where the excitement is total with regard to the functions of the brain, where there is in every part the general exercise of sense and volition. I know that there are many cases where there is a mixture of the excitement and the collapse, or of the increased and diminished energy of the brain, but I hold that to be the state of waking and of excitement, when the whole of the functions of the brain can be exercised; and, upon the contrary, whenever these functions are for the most part suspended, that I would call, more strictly, a state of collapse; and so upwards and downwards as it may occur. A degree of collapse, or diminished energy of the brain, takes place in the case of natural sleep; we call it a state of collapse when the excitement is partial, when the collapse prevails so far as to suspend very entirely the exercise of the functions of sense and volition, so that such a collapse takes place in sleep as is sufficient to weaken the general activity of the brain.'

" Dr Cullen supposed that the Delirium or Reverie which appears in the state intermediate between sleeping and waking, arises from the brain being in a state of partial collapse; and that dreaming, in which the animal functions are obviously not entirely suspended, is owing to the collapse, or diminished energy of the brain, being in a less complete degree than in the state of natural sleep, and that, in proportion as the degree of collapse is less or greater, the dreaming is more or less active. ' There are,' he observes, ' intermediate states between sleep and waking, and the sensibility is greater or less, as the tendency to either happens to prevail; and we particularly observe such intermediate states in the application of narcotics, when they produce a degree of drowsiness or stupor, and therefore the sensibility of the brain is diminished by the operation of narcotics.'

" In allusion, apparently, to an observation of Haller, that sleep is sometimes produced by mechanical causes occasioning compression of the brain, Dr Cullen points out in what he considers the state of coma resulting from compression, to differ from sleep.

" A certain compression of the brain can produce a state of the system resembling sleep with very great exactness, as we learn from the histories and dissections of cases in which such preternatural sleep had appeared. This has occasioned the supposition that some such state occasions sleep, and the removing it, a contrary state; but little attention is to be paid to this theory. The state produced by compression is, in some respects, different from that of ordinary sleep, and the difference chiefly consists in the state of *excitability*. We find that natural sleep can be interrupted by moderate stimuli, whereas, this artificial sleep is not to be interrupted, unless by removing the cause. At the same time,' he continues, ' I must say that there are certain states of sleep produced by the causes that produce natural sleep, that are in such a degree, that persons in them are hardly more excitable than in those states depending upon compression. Thus, in a man dead drunk, where I suppose the sleep produced by a similar cause with that which produces natural sleep, the *excitability* is here hardly in a greater degree than in cases of compression.'

"In extending his application of the doctrine of Excitement and Collapse to the Morbid phenomena of the animal economy, Dr Cullen made choice of mania and syncope, as two affections calculated to illustrate his opinions respecting these opposite states of strength and weakness, vigour and debility, sthenia and asthenia of the nervous system; the first, Mania, being an example of a disease in which the excitement is increased above the natural standard; and the second, Syncope, of one in which the excitement is reduced below that standard, or in which a degree of the state of Collapse or diminished energy of the brain takes place."—Pp. 310–314.

These terms of *Excitement* and *Excitability*, Cullen was led, by a species of analogy derived from the theory of electricity, and the example of bodies in which electricity could be excited and accumulated, to apply to the nervous system, in which he conceived that the nervous fluid might during life be capable of excitation and discharge or exhaustion. This idea had been originally proposed by Sauvages, and was to a certain extent adopted by several contemporary physiologists, among others, Lacaze, Laghi, and Wrisberg. "The idea of collapse," Dr Thomson suggests, "Dr Cullen had probably derived from Boerhaave, who, in stating what he conceived to be the proximate cause of sleep, says, that in so far as the solids are concerned, it is the compression or *collapse* of the smallest vessels of the brain, in consequence of which they cannot transmit their fluids."—P. 318.

These speculations are doubtless refined, and perhaps not all susceptible of strict proof. But it must be remembered that the subject was extremely obscure, and unintelligible, and could scarcely be explained in any other mode than by illustration derived from mechanical and material operations, of which all persons could form an opinion more or less intelligible; and it must also be kept in remembrance, that, in the exposition of his views, Dr Cullen, as in every other case in which it was necessary to have recourse to hypothesis, drew an accurate distinction between that and theory.

The Institutions of medicine always embraced in the Edinburgh course of education what is denominated *General Pathology;* and the great object which Cullen had in view in explaining so minutely, and at so much length, the properties and functions of the nervous system, and the laws by which they are regulated, was to show his students the sovereign influence of that system in the preservation of health and the production of disease. In this department, his chief model was the treatise of Gaubius, the only one at that time extant, and of which he appears to have entertained a very high opinion. But, though he read the Outlines of this author as his text-book, he did not adhere to them with servile attachment. We think it singular, that, in this department of his course, he does not appear to have been practically conscious of the value of an observation which he himself made on Sydenham, viz. that he originally had no general pathological theory, but adapted his pathology to the particular diseases which he had occasion to observe and to treat, or, as Cullen expresses it, "endeavoured to form a particular theory for every disease, or at least for every genus of disease." This is certainly the rational and useful way of forming a system of pathology ; for every general system must consist of particular members, each of which ought to be correctly established on indisputable facts, before general principles can be determined and enunciated. In this way we think he must have formed a more useful and practical system of pathological doctrine, than by following any author, however distinguished and however popular; and if it were requisite to demonstrate the soundness of this opinion, it is easy to show, that, in point of fact, it was the object which Cullen eventually placed before him, and which he laboured indefatigably to effect in the composition of the Nosology, the First Lines, and the pathological doctrines of the *Materia Medica.*

Dr Cullen distinguished all the diseases of the animal body, in imitation of this author, into those of the solids and those of the fluids. The diseases of the solids, again, he divided into those which are common to the whole frame, (*morbi solidi simplicis)* and those which are proper to certain organs *(morbi organici.)* The simple solids, it is well known, are those whose properties are the same in the dead as in the living state, in contradistinction to the vital solids, which present during life properties which cease to exist on its termination. The most abundant simple solid in the body is the cellular tissue, which enters into the constitution of so many other tissues; and, of course, bone, tendon, skin, mucous membrane, serous membrane, &c. all belong to the same category. The pathology of these parts, as given by Gaubius, and adopted by Cullen, is decidedly the most objectionable and imperfect part of the system, in so far as it consists of a series of abstract generalizations, without any definite or specific character, and minute subdivisions, which seem more hypothetical than real.

On the subject of the diseases of the fluids, on which so many changes has been urged against Cullen, the following extract may be perused with advantage.

" That the Fluids have a share in the performance of the natural functions, and that their deviations have a share in diseases, is true. The *vitia fluidorum* are, therefore, agreeably to both ancients and moderns, properly considered in a view of general pathology, as proximate causes of diseases. But diseases properly consist in the *actiones læsæ,* and consequently there may be a great many deviations in the state of the fluids, from their most healthy state, without diseases being produced ; it is only, as Gaubius says, when the solids are at length affected, that they form diseases. The pathologists, therefore, have been very improperly employed in considering only the affections of the fluids. Physicians have been accustomed so long to talk upon this subject, that they do not apprehend the mystery, as I would call it, in which it is involved ; but it is still involved in a great deal of obscurity, and I think I cannot do better than to consider the subject as it lies in Gaubius, under the two heads of *Morbi Humorum Absoluti* and *Morbi Humorum Relativi,* the former comprehending changes in the coherence of the fluids, their vitiated qualities, and the vitiated states of the secretions ; the latter changes in the quantity, in the place, and in the motion of the fluids. In commenting on Gaubius's divisions, I shall often have more to object to than to illustrate, but I could not attempt a system for myself, and it is to be presumed that Dr Gaubius, who is a man of uncommon discernment and great erudition, has put the matter in as clear a light as is possible, and that in considering what he has written, we shall see at least the present state of our knowledge on this subject."—P. 341.

In delivering the theory of diseases of the vital solid, Dr Cullen deviated considerably from his prototype Gaubius, and made very liberal use of the influence of the nervous system ; and this he did not limit to the diseases properly belonging to the nervous system, but extended to all those general affections of the animal economy in which he could recognize any derangement in any of the functions or properties which he had previously ascribed to the nervous system. Thus, in every disease in which he recognized derangement of the functions of sensation, intellect, or motion, he conceived that the nervous system was the prime agent of mischief; and this not in the limited manner in which we are at present in the habit of conceiving these operations, but as the grand medium by which external agents, whether for good or evil, for benefit or injury, operated on the system. Thus if an animal poison, or morbid contagion, or a terrestrial emanation, induced the specific derangement of the functions denominated a fever, that derangement was effected by the morbific agent operating previously on the nervous system. If, after exposure to cold and moisture, or even after a mechanical injury, inflammation attacked any particular organ, this was occasioned by the primary action of the cause on the nervous system. Even in less obvious cases, in which the operation of an external agent could not be sensibly recognized or demonstrated, and where a train of morbid actions was established without previous manifest cause, Cullen, from analogy of other complaints, and from the symptoms of depression and impairment of all the vital and animal forces, inferred the existence of a primary or incipient operation on the nervous system. This operation also he regarded as in the majority of instances of the sedative character, or of that nature in which the sensibility, the mobility, and the general energy of the nervous system are distinctly and palpably impaired.

In these doctrines, Cullen did not confine his idea of the operation of the nervous system to the nervous masses and ramified chords strictly so called; but understood also, that the nervous system, from its extensive distribution and minute subdivision, disseminated its energy to the smallest branches of the vascular system, which thus became possessed of such properties as rendered it susceptible of the numerous minute and multifarious motions of disease. The *tone* of the arterial system, or what Haller would have denominated its *irritability*, was in the commencement of fever or inflammation, he argued, impaired or abated in force and energy so much, that these vessels were unfit for their usual healthy functions of transmitting blood and performing the usual secretions; and the reaction of its natural powers in opposition to the external sedative agent or agents was the grand cause of the whole train and assemblage of morbid phenomena.

The same views Dr Cullen applied to explain the operation of medicinal agents. Though some of these possessed powers of operating more directly on certain tissues and organs than on others, and each exerted its peculiar effect, all of them, he argued, produced these effects by means of a primary and previous operation on the nervous system of the living body. These ideas are very distinctly and fully explained in the first edition of the Lectures on Materia Medica, in which, perhaps, from the early period at which these lectures were delivered, they were still new and peculiar.

"In the first place," he commences, "we adopt the proposition very well established, *Medicamentum non agit in cadaver;* that is to say, that the operation of medicines does not depend on the laws of matter and motion, which take place in inanimate bodies, but on a principle which subsists in living animals only; and we, therefore, inquire after this vital principle. It must be connected with the primary and fundamental functions of the animal economy; but these functions are so mutually the causes and effects of each other, and run so much in a circle, that it is difficult to choose where to begin. Many think the circulation of the blood may be considered as the vital principle upon which all the other functions depend; but we must trace this to its cause in the action of the heart; and this again manifestly depends upon a certain power acting upon the muscular fibres of that organ. When we consider this power, we find it belongs in common with those of the heart, to every muscular fibre in the whole body. At the same time we find that the power of the muscular fibres every where depends upon the nerves; that these nerves depend for the power which they communicate, on their connection with their common origin in the brain and *medulla spinalis:* and the nerves and muscular fibres, therefore, form a system whose functions may be considered as primary and fundamental in the animal economy."

In the lectures on this subject, published by himself in 1789, these views, though not more distinctly stated, are more elaborated, and are given as if the medical world were quite familiar with them, and with this mode of viewing the subject. "In these days," he commences at once, "it is hardly necessary to show that the action of other bodies upon the human is chiefly by the impulse of these bodies on the extremities or other parts of the nerves of the human body; in consequence of which a motion is propagated from the place of the impulse along the course of the nerves to their origin in the brain and *medulla spinalis;* and that upon such occasions there does, for the most part, arise a *sensation.* This again generally gives occasion to *a volition,* whereby a motion is produced, which being determined along the course of the nerves into certain muscles or moving fibres, the action of these, as well as the various effects which their action is suited to occasion, are in consequence produced.

"This is the general idea of the connection of the human body with the other parts of nature; or of the manner in which the human body is acted upon by other bodies, and in its turn acts upon these. That condition by which it is fitted to have peculiar effects produced in it by the action of other bodies, is called its *sensibility;* which seems to be lodged in every part of what we can discern to be parts of its nervous system: And that condition of the body by which certain parts of it are fitted to have certain motions of contraction excited in them, either from a communication with the nervous system, as expressed above, or by an impulse directly made upon these parts themselves, is termed the *irritability* of the body; which seems to exist only in the muscular or moving fibres, probably of a peculiar structure suited to that purpose.

"From all this, we come at this conclusion, that the peculiar effects of substances in general, or of those substances in particular, which we call *medicines,* when applied to the human body, depend upon their action upon its sentient and irritable parts.

"It is, however, to be remarked here, that the action of substances in producing their effects, is not universally, as insinuated above, by the intervention of sensation and volition; for these effects are often produced without either the one or the other. At the same time it is probable, that in all cases the effects produced by the action of other bodies upon the human, although not accompanied with sensation, yet are produced by their action upon the sentient parts; and it is likewise probable, that in the case of action unaccompanied with any volition, both the action and its effects depend either upon the application of those bodies directly to the irritable parts, or upon their application to sentient parts, which determine motions into those very nerves wherein motions are commonly excited by volition. Upon the whole, it is sufficiently probable, that the peculiar action of medicines depends upon the sensibility and irritability of the human body; or, in other words, that it universally depends upon motions excited and propagated in the nervous system. These, therefore, are the conditions of the living body which were engaged to explain. What is the nature of the matter in which these motions take place, or in what manner it is inherent in the nervous system, is not well known: but we think it may be justly held as existing, and may speak of it under the appellation of the *nervous power*. As it appears only in the living, and disappears entirely in the dead state of the body, it may be otherwise properly enough termed the *vital principle*."—Pp. 57—59.

These doctrines have been since found, though not strictly demonstrable on all points, to be, nevertheless, generally true and well founded; and it is rather a singular proof of the sagacity of Cullen, that the conclusions, at which mere observation and reasoning enabled him to arrive, have been confirmed by the experimental inquiries of subsequent authors. We must refer to the chapter from which the above extract is taken, to those on the action of stimulants, purgatives, and tonics, and the work of Dr Thomson at p. 396–398, for the proofs of the accuracy and originality with which Cullen reasoned on these points, and for the critical scepticism with which he looked on the doctrines then current in the schools, regarding the power of medicines in altering the constitution of the mass of fluids,—a favourite problem with the physicians of the humoral school. Had these doctrines been more industriously and carefully studied, we are inclined to think that Cullen would neither have been accused of want of observation, nor have been charged with neglecting unjustly and unreasonably the doctrine which expects to derive benefit from applying medicines to the fluids only. His reason, that we then knew little of the accurate constitution of the fluids, is quite satisfactory, we maintain, to every candid mind; and if we know more at present, it may become a fair question, whether that knowledge enables us to say that we can depend more on the operation of medicinal agents on that part of the animal economy. The imperfections of Cullen were the imperfections of the period in which he lived, and of the science itself, which it was his delight to cultivate; and if we are now in a situation to discover the blemishes of this luminary of medicine, it is chiefly by means of the refulgence which his genius has reflected on every object that lay within his range.

The best and most satisfactory proof of the merit of the doctrines and distinctions, physiological and pathological, of Cullen, was their general adoption, sometimes with, often without, acknowledgment, by almost all the physicians of Great Britain, and by the great majority of the continental schools. Short and cursory, and almost aphoristical, as were the elements of physiology which he published for the use of the students, yet so perfectly did they embrace all the principles most important to the physician, that, at the request of Dr James Gregory, they were republished by the author with little addition or emendation; that they found their way into the systems of Berlinghieri and Borsieri in Italy,—Stoll, Blumenbach, Sprengel, and Reil in Germany,—Bordeu, Bichat, and Pinel, in France, and numerous other writers or teachers of medicine; and that, in short, they were in many different modes embodied and identified with all the physiological, and many of the practical, publications of Europe. M. De la Roche of Geneva even has, in his *Analysis of the Functions of the Nervous System*, reproduced all the essential doctrines of Cullen on this subject, as a system of his own. Bichat also, not always too scrupulous about the sources of his information, has, in many parts of his physiological writings, given as original the very ideas which Cullen took so much pains to expound and impress on his pupils; and Blumenbach, Reil, and Ackermann, in modifying their doctrines to the taste of their countrymen, have nevertheless been quite unsuccessful in concealing the great source from which they were derived.

It is indeed a curious fact, which speaks more strongly for Cullen's extraordinary merit as a philosophic physician than any professed panegyric, that the meditative physiologists of the German school have rarely gone wrong in their speculative ideas, unless when they have departed from the principles of their Scottish instructor; and while on all common topics their doctrines are quite rational and intelligible, the moment they launch into the wide sea of psychological physiology, their ideas become fanciful, extravagant, and mystical to an incredible degree. The physiological dogmata of Soemmering and Blumenbach are certainly by far the most sensible and valuable specimens of this species of information which we have received from Germany; and the principal reason of their value, is the sober, restrained, and precise manner in which these authors have enunciated and explained the great principles of the physiology of Haller and Cullen. Of the influence of this leaven of the Cullenian principles, these authors are doubtless unconscious; and it could scarcely be otherwise, since the principles of which we speak were insinuated insensibly in every medical school of any note by a thousand channels, and by numerous followers. The fact, however, is not the less true; and it is perhaps a solitary instance in the history of scientific opinions, that a theory has been propagated and disseminated with equal success by its friends and its foes, by those who studied and admired it, and by those who opposed and contemned it. The refutation attempted in the *Principia* of Brown acquired, indeed, a temporary credence by the celebrity of the author, a plausible and superficial speculatist, who courted a short-lived popularity as the advocate of principles more specious than true, and practice more agreeable than safe. But the shallow sophistry was soon detected; and the hypothesis of ephemeral notoriety has long ago ceased to obtain patrons among the speculative enthusiasts even of the German and Italian schools. Nor in our own country had the crude and imperfectly digested materialism of Darwin any other effect than that of causing the zoo-dynamicism of Cullen to be studied more profoundly, to be appreciated more highly, and to take root more firmly; and it seems almost certain that if it is ever completely subverted, it must be by the total disjunction of theory and principle from practice and action.

It is time, however, to close this article, which has already exceeded by a considerable space the limits within which it was our intention to have confined it. We have not discussed all the subjects in the present volume so fully as we could have wished; and one subject, that of the exclusive privileges of the College of Physicians of London, and of the two English Universities, our time and space have not allowed us to touch. We cannot close the volume, however, without remarking how much the profession in general, and the reading part of it in particular, are indebted to Dr Thomson for the valuable and accurate history which he has given of the progress of medical science during the life of the subject of the present biography. To write such a work as it ought to be done, requires not only profound and accurate knowledge of the history of our science, but that enthusiastic admiration of it, and of the great men by whom it has been most ably and successfully cultivated, which alone can invest with interest the consideration of abstract theoretical questions, the history of scientific opinions and doctrines, and the contemplation of the glories of departed talent, and of times which live only in the fading remembrance of those rapidly retiring from the busy scenes of life. It is superfluous to say how well qualified the author of the present volume is for such a task; and it is fortunate that it has fallen into the hands of one who, with similar professional enthusiasm, kindred love of science, ardour in communicating its benefits to others, and intimate acquaintance with the writings and doctrines of his author, has been so able to do it every justice.

ART. III.—*Clinical Reports of the Surgical Practice of the Glasgow Royal Infirmary.* By JOHN MACFARLANE, M. D., Member of the Faculty of Physicians and Surgeons of Glasgow, Senior Surgeon to the Royal Infirmary, Lecturer on Clinical Surgery, &c. Glasgow, 1832. 8vo. Pp. 314.

WE have always taken the earliest opportunities of bringing before the notice of our readers all practical works of the present description; and of late we have had frequent occasion to impress the value of those reports of clinical practice which emanate from the medical officers of our great public hospitals. When the cases that occur in a large hospital or to an eminent practitioner are unreservedly and candidly laid before the public, they teach many important lessons, particularly to the junior part of the profession. They show that in actual practice, diseases do not always occur uncomplicated, nor are remedies and operations always successful or uniform in their results; but on the contrary, that, from unfavourable concomitant circumstances, peculiarities on the part of the patients, or the occurrence of some unexpected and unfortunate casualty, the most prompt and best directed efforts of the most judicious surgeons may be impeded and even rendered abortive. As from this source spring many of the difficulties in the practice of surgery, so it is only by a knowledge of these events, and the circumstances under which they occur, that the surgeon can hope to be prepared to obviate them, and counteract their effects.

When such circumstances are candidly laid before the profession in the accurate histories of numerous important cases, they become of the utmost value to the junior practitioner. They warn him of difficulties and accidents he may meet with, and the most rational mode of obviating them,—teach him many useful lessons, as to the diagnosis of obscure cases,—and show him the results of different modes of treatment. And even when the events of the cases have proved unfortunate, when unreservedly stated, they are equally instructive as those attended with the most complete success.

In the work now before us, containing full details of important cases, designedly with the above objects in view, by a judicious and eminent practitioner, we have much valuable practical information. The extent of the experience is considerable. The cases are stated with sufficient minuteness, and apparently with great accuracy and discrimination,—and are accompanied with judicious practical remarks.

The author has arranged the cases under the various diseases, as aneurism, tumours, hernia, lithotomy, &c. We shall therefore lay before our readers a short analysis of each of these heads, as illustrated by Dr Macfarlane.

Of Aneurism.—Dr Macfarlane's work contains nine cases. Five of these were cases of poplitcal aneurism, in which the ligature of the femoral artery was practised, in two of the cases with complete success; in the others gangrene of the limbs and death supervened; two of these were in the limbs of the same individual, and the gangrene seemed owing to general disease of the arterial system, in the other it was caused by erysipelas. In one of the cases cured, an aneurism existed, both on the popliteal and anterior tibial arteries. In this case, though pulsation returned in both tumours, on the twelfth day after the application of the ligature to the femoral, a complete cure was effected by antiphlogistic means conjoined with pressure.

Several cases of aneurism by anastomosis are given which had been cured by inflammation excited in the tumour in different ways, by ligature, by vaccination, by temporary ligature, by actual cautery, and by the introduction of a seton. Some of these remedies are more applicable than others, from the peculiar situation of the tumour in different cases. In one case of a child who was teething, when the tumour was on the head, the application of a ligature caused convulsions, which were removed by taking off the ligature. The tumour afterwards sloughed, and a cure followed.

Of Tumours.—A great number of interesting and important cases are given, various in their nature, and different in their situations. In the cases given, the tumours were situated on the head, neck, *mamma*, *parietes* of the trunk, and in the abdomen. They consisted of a great variety of species, adipose, encysted, tubercular, cancerous, and medullary sarcoma. In several of the cases in which tumours of the *mamma* were the subjects of operation, the adjacent glands were in a diseased state; and though an apparent cure was effected, it would be of great importance to ascertain at a future period in how many of these the cure was permanent.

On tumours of the abdomen, the cases and remarks of Dr Macfarlane are, in the present state of our knowledge, peculiarly interesting. In one case, disease of the omentum simulated enlargement of the ovarium. In other two a similar disease was mistaken for extra-uterine pregnancy. In another, a cyst containing hydatids attached to the liver was mistaken for, and operated upon as a concretion in the colon. In two cases of sarcomatous enlargement of the ovaries, they adhered very firmly and extensively to the adjacent parts. Those cases are narrated to show the difficulty, if not impossibility, of forming a correct diagnosis in such diseases. The following additional remarks are of great practical importance.

"It cannot be expected that I should enter here into a minute investigation of the various morbid changes to be discovered in the different forms of ovarian disease. There are, however, several points of the highest importance, as regard the expediency and safety of extirpating these tumours by the operation of gastrotomy; for the clear and satisfactory elucidation of which, a careful and accurate examination of their *post-mortem* conditions is essentially requisite. I may be permitted, in offering the following abstract, as the result of my own investigation into the surgical pathology of this disease, to state, that I have seen, during the last fifteen years, above forty cases of ovarian tumours, chiefly among the poor in the district of this city which was lately under my care,—and that I have in my possession, the notes of fourteen dissections performed by myself, in all of which, the nature, extent, and connexions of the disease were correctly ascertained. The following is the result:—

"When the disease was first noticed, two of the fourteen patients were under thirty years of age; four were from thirty to forty; five from forty to fifty; and three above fifty. Before the disease proved fatal, it existed in two cases four years; in three, eight years; in one, nine; in four, eleven; and in other four, from thirteen to eighteen years. In four cases, the tumour was confined to the right ovary; in seven, to the left; and in three, both were implicated. In one, the ovarium was distended into a large cyst, without any appearance of solid growth, and was, of course, mistaken during life for ascites; in nine, chronic enlargement existed, in combination with one or more cysts containing fluid, (six of these were tuberose, and three smooth on the surface); and the remaining four were solid throughout. In twelve of these cases, adhesions, more or less intimate and extensive, existed between the tumours and the parietes and viscera of the pelvis; three of which had likewise become adherent to the abdominal parietes, omentum, and intestines. Only two were free from preternatural adhesions; and in these the tumours were attached to the broad ligament by a slender pedicle. In three of the twelve cases, it appeared that the adhesions might have been divided without much risk or difficulty; but in the remaining nine, this procedure was altogether impracticable, and could not have been accomplished without imminent danger to all, and certain death to some. In eight of the adherent cases, the basis of the tumour was thick and broad,—the size of this part appearing to depend more frequently on the extent and intimacy of the secondary attachments to the pelvis, than on the magnitude of the tumours.

"Before stating the objections which, from these and other considerations, I have been led to form against the operation of gastrotomy for the removal of ovarian tumours, I shall allude very briefly to the results of some of the published cases in which this treatment was employed. These remarks shall be confined to twelve cases, three of which occurred to Dr M'Dowal, of Kentucky in America; four to Mr Lizars, of Edinburgh; and five in Germany, to Dieffenbach of Berlin, Hopfer, Chrysmer, and Martini. Of these, four died and eight recovered. In nine, the tumours adhered, more or less extensively, to the contiguous parts: in four of these, the adhesions were divided, and the tumours wholly removed; in one, only a part of the disease was extirpated; and in the remaining four, the extent and intimacy of the existing adhesions prevented the operations from being completed. In one of the cases, the abdomen was opened, and no tumour found: this patient fortunately recovered. Besides the extent of the adhesions, the operator was deterred from removing the tumour in another case, by the number and size of the arteries, which were seen to pulsate violently in the pedicle."—Pp 83-85.

The objections to gastrotomy stated by Dr Macfarlane, are chiefly, 1*st*, the difficulty of establishing a correct diagnosis regarding abdominal tumours; for these may arise from various different parts, and yet present the same external appearances and symptoms. 2*d*, The impossibility of ascertaining the size of the pedicle by which they are attached, and the existence of preternatural adhesions, which, in many cases, would prevent the extirpation of the disease.

"Mr Lizars," says Dr Macfarlane, "who is one of the most zealous advocates for this operation, while he acknowledges the difficulty of this investigation, recommends that the abdomen be laid open; and if adhesions exist, that they should be divided. I cannot believe that a procedure, so uncertain in its results, and so dangerous to the patient, is likely to be adopted. Who, unless under the most desperate circumstances, would thus proceed on a voyage of discovery into the abdomen, through an incison from sternum to pubes? Are we justifiable in considering this as a judicious and commendable method of exploring the state of the pelvic and abdominal viscera? On the contrary,—is it not rash and dangerous, and does it not display more of the reckless boldness of the charlatan, than of the cool and dispassionate procedure of the scientific surgeon? We know the frequency, extent, and intimacy of the adhesions, by which ovarian tumours are secured to the neighbouring parts, and we can form some estimate of the difficulties and dangers to be encountered in removing them by surgical operation. If we compare these with the trifling uneasiness which the disease generally produces, and consider that it may continue for many years without seriously injuring the health, we ought to pause before we have recourse to gastrotomy."—P. 86, 87.

In short, this operation cannot be too highly reprobated, even in cases which appear most favourable for it. As an experimental practice in doubtful cases, where no tumour may be found, and the patient die, we leave to the operator to distinguish between it and culpable homicide.

On Hernia the work of Dr Macfarlane presents several very interesting cases to the profession. The first case is a very instructive one. The patient, 39 years of age, had a reducible inguinal hernia for twenty years. It became strangulated; a surgeon made violent efforts to reduce it. These were repeated several times without success. When the operation was performed, the following was the state of the parts, in the author's own words:

> "When the sac was opened, fully a pound and a half of dark-coloured blood escaped; a considerable quantity of which was pressed up from the depending part of the scrotum. The hernial tumour consisted of a large piece of omentum, which was covered with coagulated blood, and of nearly two feet of intestine. The omentum was contused and lacerated, and the protruded gut, which was afterwards found to be the ileon, was almost wholly separated from the mesentery. It contained several rents, which passed in a longitudinal direction; and into each of these openings two or three fingers could be introduced. There had been no escape of feculent matter, but the gut was flaccid, and of a deep purple colour; the discoloration depending not on gangrene, but on the extravasation of blood into the cavity of the bowel, and between its coats."—P. 89.

Dr Macfarlane found it impossible to retain the protruded parts when replaced in the cavity of the abdomen. He therefore divided the protruding bowel in two places, and removed it, leaving the cut extremities open at the wound. The patient died seven hours after the operation. From this and several other cases of ruptured bowel from the same cause, which he has seen, Dr Macfarlane very properly shows strongly the impropriety of employing the taxis for a length of time without sufficient caution. In such cases main force has taken the place of skill and art, which cannot be too much reprehended. When the bowel or any other part is in an inflamed state, it becomes soft and friable, and is unable to resist even very slight pressure.

Most of the other cases of hernia detailed by Dr Macfarlane have peculiarities which render them interesting to the practical surgeon. In one the operation was followed by erysipelas and copious suppuration, but was eventually cured. In another cured, a portion of omentum was excised. The fourth was unsuccessful from the conjunction of a mesenteric hernia. The fifth was cured, though the protruding parts adhered to the sac from which they were separated, and returned into the abdomen. In the sixth, the bowel was enclosed in a complete sac formed by the omentum. The ninth case is of very peculiar interest in a practical point of view. The patient, æt. 60, had a reducible scrotal hernia in the left side for thirty years, and the same in the right for twelve years. For more than a year that on the right had been complicated with a hydrocele. The palliative remedy of puncturing the hydrocele had been several times repeated.

Immediately after the last time this operation had been performed, inflammation of the scrotum took place, which terminated in gangrene. When admitted into the hospital, the scrotum was about the size of a man's head. The sloughs separated, and discovered the bowel to be in a state of gangrene, perforated, and discharging feces. The feculent discharge continued by this opening for three weeks, when it closed, and the contents of the bowels resumed their natural course. In about a month after this he died from dropsy occasioned by disease of the heart. On dissection, it was scarcely possible to ascertain in what portion of the intestine the artificial anus had existed; it had contracted no adhesions, and was healthy in appearance.

Of Lithotomy. a very considerable number of cases are given by Dr Macfarlane. Of thirteen cases operated on, ten recovered. In four of these the patients were children, all of whom were cured. In other two cases of children who had calculus, (one a female,) the stones were extracted by the urethra with complete success. In the unsuccessful cases the operation proved fatal in one from urinary extravasation and peritonitis; in another from obstructed bowels caused by an osseous tumour of the mesentery; in the third, from extensive disease of the prostate gland and bladder eight weeks after the operation.

In several of the cases successfully operated on, difficulties in accomplishing the operation occurred which every lithotomist must be prepared to encounter; such as the stone being of great size, the stone being encysted, spasmodic contraction of the bladder, hemorrhage, &c.

The cases illustrating the other diseases given in the work before us are, generally speaking, of more frequent occurrence than those already mentioned; and, as the greater part of them present very little that is interesting either from novelty or peculiar practical importance, we shall do little more than enumerate the subjects.

Of Wounds of the Bladder two very severe cases are detailed, where both it and the rectum were severely lacerated; in the one case by a fall upon sharp iron pikes, in the other by being thrown down and gored by the horn of a bull. Though both of these very severe cases were followed by urinary fistula they were, much to the credit of Dr Macfarlane, completely cured.

Of Contusions of the Urethra—Urinary Abscess—and Abscess of the Prostate Gland, several very interesting cases are recorded.

Of Prolapsus Ani and Affections of the Female Organs of Generation, several cases are given which were cured by operation. In three cases of *prolapsus ani*, Dr Macfarlane effected a cure by the excision of a fold of loose skin from around the verge of the anus. In one case of imperforate vagina, which proved fatal from peritonitis, the uterus was found to be wanting. There existed, however, both ovaries and Fallopian tubes, and the patient, a married woman, had no deficiency of sexual desire.

Of Fractures of the Extremities both simple and compound,—Dislocations—Injuries of the Head and Spine, many good cases are detailed such as are of daily occurrence in every large hospital. In one case there was a successful amputation performed at the hip joint. By some of the cases given, Dr Macfarlane gives confirmation to the propriety of amputation in cases of spreading gangrene arising from local causes, He also advocates the application of the trephine when necessary to remove depressed portions of the cranium, though no symptoms of compressed brain exist, in order to prevent dangerous symptoms supervening.

Of Tetanus, five cases are given, one of which only, a patient of seven years of age, was cured. In it the disease had been caused by a wound from a nail. The remedies were free purging with castor oil, blister and cautery to the spine, prussic acid and injections with laudanum.

Of Burns, many interesting cases are given.—The application of cotton seems a favourite remedy, and in many cases was used with very marked advantage.

The cases belonging to the remaining subjects,—*Erysipelas—Diseases of the Bones and Joints—Lupus—Lumbar abscess—and Diseases of the Testis*, do not require any very particular notice. In erysipelas great benefit was derived in several cases from free incisions. In one case the bones forming the elbow-joint were excised with success. Of lumbar abscesses some were cured when the bones of the spine were not affected, when this occurred the cases proved fatal. In one case hæmatocele occurred in consequence of hemorrhage from a small tumour within the *tunica vaginalis.* This cavity was laid open, and the tumour removed.

In concluding our analysis of the work of Dr Macfarlane, we can with much confidence recommend it for perusal particularly to the junior part of the profession, as a work containing much interesting practical information. Its publication does much credit to Dr Macfarlane, as showing the judicious application of sound professional principles and liberality worthy of being imitated by other hospital surgeons.

Art. IV.—*The Anatomy of the Thymus Gland.* By Sir Astley Cooper, Bart., F. R. S. Serjeant Surgeon to the King, Consulting Surgeon to Guy's Hospital, &c. &c. &c. London, 1832. Pp. 48, 4to. With Lithographic Engravings.

THE zeal and assiduity with which this distinguished surgeon continues to cultivate anatomy, and communicate the results of his researches to his junior brethren and the profession, are highly laudable, and cannot fail to command the admiration as well as the thanks of every liberal mind. When Sir Astley Cooper was merely a young but rising hospital surgeon, it was not astonishing that he should devote so much time, and take so much pains, in elucidating the anatomical and pathological history of hernia. The mechanism of the disease was then imperfectly known; and it was natural to think, that a well-educated surgeon, who knew how much depends on being thoroughly acquainted with the anatomical relations of the parts concerned in its production, and who must in the course of his experience have repeatedly observed how closely the means of affording relief are connected with the knowledge of the varieties of structural arrangement, might study and investigate a subject so imperfectly known. In such circumstances, every thing was to be acquired, and every reason of ambition and interest concurred to stimulate the inquirer in his investigation. The honourable desire of professional distinction, the equally laudable wish to acquire and communicate useful knowledge, and to improve the practice of surgery, the expectation of success, and the resolution to deserve it, all combined to act as inducements to the diligent cultivation of the anatomical principles of his profession.

It presents, however, a rare combination of disinterested diligence and scientific zeal, to see the most able surgeon in Europe, after many years of a public career, not less useful than successful, still persevering with unabated ardour in extending and rectifying our knowledge of the mechanism of the human frame; and endeavouring to illustrate obscure and unintelligible forms of organic structure, for no other purpose but the gratification of a philosophical and enlightened curiosity. The leisure which his professional pursuits allow him, and which was formerly occupied in the laborious duties of hospital surgeon, Sir Astley Cooper renders equally useful to the world as before, and presents an example of diligence and enthusiasm deserving the esteem and imitation of all his brethren.

The structure and use of the thymus gland, it is well known, have been a sort of enigma to anatomists and physiologists. Of a very large size in the period of fœtal life, diminishing rapidly in magnitude with the growth of the rest of the body, and almost obliterated in the adult and old subject, it has been generally imagined to be intimately connected with some purposes of the fœtal existence.

It was observed by Harvey, Ruysch, and Munnicks, that the thymus gland enclosed one or more cavities containing always a milky fluid, which, according to Verheyen and Tauvry, was poured into the *pericardium* for the purpose of lubricating its inner surface. Wharton informs us that he often observed lymphatic vessels *(lymphæ ductus)* distributed through its substance, and opening into the subclavian vein ; * but denied the existence of any excretory duct. Drelincourt, in like manner, saw in the *thymus* of a dog numerous lymphatic vessels filled with a yellowish fluid, and also terminating in the left subclavian veins. Muralto, on the other hand, a friend of Peyer, and professor of anatomy at Zurich, thought that he had seen an excretory duct which opened into the *bronchi ;* and Heister maintained that he traced this duct to the vicinity of the tongue.

The first correct observations, however, were made by Duvernoy of Tubingen, who represents this body as consisting externally of an immense number of minute lobules, in the intervals of which lymphatic vessels are distributed, and which form a general cavity, so much larger as the fœtus is less advanced, and containing a gelatinous fluid, in which a vascular net-work floats. † Pozzi and the younger Morand again describe it as containing numerous communicating cavities. In all the fœtuses examined by Haller, he found a single general cavity containing a gelatinous fluid, which curdled on the addition of alcohol, and which, however, he allows, could be forced by expression from every part of the gland. These statements are repeated by Portal, and most of the anatomists of that time.

Mr Hewson, from certain speculations on the analogy of the *thymus* with the lymphatic glands, was led to examine its structure with considerable attention. He regarded it as a gland of the conglomerate description, consisting of numerous small lobules or *acini*, mutually united by blood-vessels and filamentous tissue. With the view of discovering whether it possessed an excretory duct, he applied a ligature round it in the dog and calf; but after the most scrupulous examination, his friend Mr Falconar informs us, he could find no excretory duct in either case, but only a great number of lymphatic vessels distended with dark-coloured fluid, rather opaque, different from the fluid in the other lymphatics, and which, when subjected to microscopic examination, we are told, was found to consist of numerous small white solid particles, exactly resembling in size and shape the central particles in the vesicles of the blood, or such as are found in the lymphatic glands. Mr Hewson was from this similitude led to infer that the lymphatic vessels might be the excretories of the gland; and on examining the albuminous fluid of the common cavity, he informs us that its constituent particles were found in all respects quite similar to those of the fluid of the lymphatics.

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* Adenographia p. 106.

† Acta Petropolitana, Tom. vii. p. 200.

It may be almost superfluous to remind our readers, that Hewson was led by miscroscopical observations to consider the globules of the blood as of a *nummular* shape, or flattened like a coin, and to think that each consisted of a solid particle contained in a flat vesicle, and occupying its middle only, while the surrounding space is either empty or contains a subtile fluid, in which they float. These central particles also, he endeavoured to prove, to be similar to, or rather identical with, certain particles found in the fluid of the lymphatic glands, and the great use of which, therefore, he maintained, was to fabricate or manufacture these central particles contained in the vesicles of the globules of the blood.

Mr Hewson, from considering the great vascularity of the thymus gland, and the liberal supply of blood which it receives, was then led to think that one use of it was secrete from the blood a fluid containing numberless solid particles similar to those found in the lymphatic glands, and that the lymphatic vessels convey this secreted fluid through the thoracic duct into the blood-vessels, and thus become the excretory ducts of the gland. Mr Hewson therefore inferred, that in structure and uses the *thymus* gland resembles the lymphatics generally, and that, forming an appendage to them, it prepares the central solid particles during the fœtal period of life when they are most wanted. Hewson farther made some observations on the growth of the organ, which, if confirmed, deserve particular attention. He remarked, that from the time of birth to the end of the first year, the gland continues to enlarge nearly at the same rate with the other parts of the body; that, from the end of the first to the third year, it preserves nearly the same size, being neither perceptibly enlarged nor diminished; and that, between the third and the tenth years, it sensibly decreases in size, and gradually wasting, becomes smaller and smaller, till the child has attained the eleventh or twelfth year, when it is usually quite effaced, or left only in the shape of a firm ligamentous body, like condensed cellular tissue.

Having established these preliminaries, Mr Hewson inferred, that the grand use of the thymus gland, as is that of the lymphatic generally, was for fabricating, or preparing the central particles of the globules of the blood, and that the reason why it is larger during the fœtal and early period of existence, is, that it may act as an auxiliary to the lymphatic system, for the purpose of forming more of these central particles than the lymphatic glands were themselves adequate to prepare during that time when nature most particularly requires them.*

M. Roux, who assisted Buisson in editing the posthumous works of Bichat, without appearing to be aware of the researches and opinions of Hewson, describes the *thymus* as he had inspected it in the human fœtus, and in the lamb, calf, &c. as a fawn coloured organ, acquiring, however, a deeper tint as the close of utero-gestation approaches, and consisting of an assemblage of minute vesicles, with very thin *parietes*, mutually united by loose cellular tissue, and which, when separated, are not all of the same size, and which are filled by a whitish milky and ropy fluid, the presence of which gives the gland its peculiar softness.† The idea of excretory ducts he rejects entirely, and offers no opinion on the use or purpose of the cells or their contents.

Meckel, on the contrary, appears to have attached some importance to the observations of Hewson; since he makes the fact observed by him, of the lymphatics acting as excretory ducts to the thymus, the foundation of a distinction which he draws between the two orders, into which he divides the glands of the animal body. Allowing the character of *perfect glands* to the ordinary conglomerate and secreting glands, he designates by the denomination of *imperfect*, all those gland-like bodies in which no excretory duct has been recognized, for instance the mammaries of the male, the lymphatic glands generally, the thyroid, the *thymus* gland, and the supra-renal capsules.

Meckel very properly remarks the discordance of statements among anatomists regarding the fact of a general cavity or communicating cells. All these opinions he refers to two general heads, one of those who maintain that the gelatinous fluid is contained in the cells of the lobes,—the other, of those who admit the presence of a large cavity, the parietes of which are formed by the substance of the organs. The last opinion he is most inclined to adopt; and states, that several times, in examining the recent thymus, he had found a large cavity or chamber in each of its two lateral lobes, either by incision, or by inflating them by air. This cavity, he farther adds, which is lined by a smooth thin membrane, contains the milky gelatinous fluid. Meckel nevertheless admits, that in some specimens he found the chamber less apparent, and that, consequently, the internal arrangement of the *thymus* may not be at all times identical. Thus, in some circumstances, the lateral cavities are divided into compartments by intermediate *septa* or bands. * Is it not possible, we ask, that the different states of the interior may be referable to different periods of the process of developement?

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* Experimental Inquiries, Part iii. Chap. iii. and v. by M. Falconar. London, 1777.

† Traité d' Anatomie Descriptive de Xav. Bichat, T. v. par Ph. T. Roux, p. 460-461. Paris, 1803.

On this obscure subject, the researches of Sir Astley Cooper have thrown a great deal of satisfactory light. By inspecting it in the calf and lamb, and several other animals, not only in the recent natural state, but after induration by alum, corrosive sublimate, or alcohol, after injection by quicksilver or size, and after inflation, desiccation, and division, Sir Astley has been enabled to ascertain a great number of interesting facts illustrative of its intimate organization.

Sir Astley began his inquiries by examining the thymus gland of the calf, which he distinguishes into five portions;—1. a thoracic, or that contained in the chest, 2. an isthmus or portion uniting the two sides, 3. a cervical part, and 4. and 5. two *cornua* or lateral processes. 1. The thoracic portion is placed below the upper part of the sternum, supposing the animal stretched on its back, in the anterior mediastinum, attached behind to the pericardium, and below to a strong fascia extending from the apex of the thorax to the aorta. 2. The *isthmus*, which is situate opposite to the upper bone of the sternum, is of small size, but connects the thoracic to the cervical portion, passing through a distinct aperture of the *fascia* already mentioned. 3. The cervical or tracheal portion is distinguished by being placed in the anterior or sternal surface of the *trachea*, where it is covered by the sterno-hyoid and sterno-thyroid muscles, and with the carotid artery and internal jugular vein on the outer side. 4. and 5. the *cornua* occupy each side of the *trachea* and larynx, being covered near the *sternum* by the sterno-mastoid muscles, and thence extended upwards or atlantad towards the head to near the hyoid bone, where they are incurvated on themselves.

The thoracic portion minutely examined is found to consist of two columnar masses, which may be unravelled and arranged in a circular segment, with the isthmus,—also separable into two columns, attached to its upper or segmental part.

Each of these divisions of the gland consists of separate masses or lobes, different in shape, but most distinct in the *cornua*, and least so in the isthmus. These lobes consist of smaller masses or lobules placed nearly opposite each other, on different sides of the central line or axis of the gland. These lobes when first divided, appear to be mere pulpy masses void of organization; but when alcohol is injected into them, numerous large cavities are brought into view, from which a quantity of milky fluid immediately escapes. Of this structure, which constitutes the peculiar character of the organization of the gland, Sir Astley Cooper gives the following account.

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* Handbuch der Anatomie, Band. iii.

"When each lobe is unravelled, it is found to be formed in the following manner. The external surface is composed of small secreting cells, and within it are placed numerous cavities or reservoirs which are lined by delicate mucous membranes marking the boundary of each. Those which are placed in the interior of the lobe are reservoirs to the small cavities which are situated nearer the surface, and for that purpose they are of considerable size, so that many of them are as large as a pea, although of an oblong form.

"The size of the reservoirs varies according to their degree of distension, be it of their natural fluid or an injection, but they are so thin and yield so easily that when opened they immediately fall together and close so as not to be apparent without injecting and hardening them.

"Their number in each lobe varies according to its magnitude; the secreting cavities upon the surface are small and circular, but the reservoirs open into a central cavity or one nearly central, from which proceeds a vessel of communication between the lobes, surrounded by a portion of gland, which passes from lobe to lobe, to preserve a general union between the different parts of the organ. If quicksilver be thrown into one lobe, it passes, although not very readily, into several of the larger on each side of it.

"Each lobe then is made up of numerous small secreting cells, and of larger cavities or reservoirs, and each of the larger lobes is connected by a tube surrounded by a portion of glandular substance. Thus the organ is constituted of lobes having secreting cavities on the outside, reservoirs within, and a vessel of communication from lobe to lobe.

"The central vessel takes a tortuous course, so as not to be so easily injected as the gland itself.

"The whole when unravelled, has the character of a chain or a string of large beads, the smaller lobes being placed nearly opposite to each other, and the vessel of communication connecting them.

"The cells and reservoirs are lined by an extremely delicate mucous membrane, being as pellucid as the coat of an absorbent vessel. It is of a somewhat elastic nature, for if an aperture be made into any of the cavities after injecting it with quicksilver it readily empties itself, and great care is required in dissection to make it a good preparation.

"The vessel of communication is equally delicate with the lining membrane of the cavities, and the parts would not be held together but for the additional ligamentous structure I have described, which strings the lobes to each other, supports and covers the vessel of communication, and this is assisted by the arteries and veins which are distributed to the gland."—P. 8-10.

With the view of demonstrating to others, and preserving in a demonstrable state these cavities and their mutual communications, Sir Astley succeeded, after many attempts, in injecting them with coloured wax, so as to show the secreting cells, the large cavities or reservoirs, and the communicating vessel or canal. In injecting the blood-vessels, a singular peculiarity appeared in the circumstance of a vein situate parallel with the cervical part and the *cornua*.

It is further another peculiarity, that, besides numerous absorbents or lymphatics, on the posterior or dorsal surface of the *cornua* and cervical portion, two vessels sufficiently large to admit a common injecting pipe, and receive a quantity of wax, proceed along each *cornu*, and by the side of the *trachea*, towards the junction of the jugular veins with the superior *cava*, and terminate in the jugular veins by one or more apertures. These vessels, which are evidently the same as those seen by Wharton and Drelincourt, Sir Astley regards as formed to convey the fluid of the gland into the veins; but although in this respect they seem to perform the office of excretory ducts, Sir Astley regards them as rather allied in structure to absorbent vessels, that is, we presume, to lymphatics. This Sir Astley infers from the fact, that they are provided with valves, and cannot be injected but in their course towards the veins. They are denominated by Sir Astley *absorbent ducts* of the *thymus*.

Similar results were obtained from examining the thymus gland in the dog, kitten, ass, lamb, and pig; but in all these animals, excepting the lamb, the gland is so small, that it is much more difficult to inject and demonstrate the cavities.

In entering on the description of the anatomical peculiarities of the *thymus* in the human subject, Sir Astley premises an account of the thoracic *fascia*,—a membrane, which, embracing the *innominata*, left carotid, and left subclavian arteries, and extending over the coats of the aorta, and the upper boundary of the *pericardium*, constitutes the superior boundary of the *thorax*, and supports the heart in its situation and connection with the large vessels.

Anterior to this fascia in the human subject is the thymus gland, consisting of two lateral portions on each side of the mesial plane, united by coarse cellular tissue. The substance of the gland is of the conglomerate order, or consisting of numerous lobes mutually connected by filamentous tissue, varying in size from that of a pea to that of a pin-head, and arranged in a serpentine direction round a central cavity or chamber. The following is the account of the structure developed by Sir Astley.

" The gland may be unravelled and it will be discovered to be composed of a rope on each side, of which the right and left thymus is constituted, and on each of these the large lobes form knots, and it appears like a necklace of beads, but even these lobes may be still further separated.

" In order to succeed in unravelling the gland, it is necessary to divide the arteries, veins, as well as a mucous membrane, to be described hereafter, as the arteries, veins, and membrane, unite the lobes to each other to give them a serpentine course, to shorten the gland, and to lessen the space which it would otherwise occupy.

" These ropes are disposed in a spiral course around a central or nearly central cavity, and this disposition of them is preserved by the arteries, veins, and mucous membrane, by the division of which the ropes are unravelled.

" The spiral rope which constitutes the gland on the right side has no communication with that on the left, although the two glands are combined into one by cellular tissue, yet in its usual formation, the glandular structure continues entirely separate.

" In order to distinctly observe the rope, and to unravel it satisfactorily, it is necessary to dissect it, in part, in water, and then harden it in alcohol, when the dissection may be minutely pursued, and the lobes and their communicating portions be preserved and readily demonstrated.

" This rope or chain of gland is composed of lobes of different sizes, connected together by membrane and by smaller portions of glands which surround a large internal cavity.

" To proceed with the investigation of the structure of this gland, remove a very thin superficial slice of each lobe, or of several of these, and numerous little cavities will be seen which may be set open after the organ has been hardened in spirits of wine, and these are the secretory cavities or cells producing the fluid which issues so abundantly.

" The lobes being further examined, beside their cells, are found to contain a small pouch at their bases, which leads into a reservoir, so that the secretion which escapes from the lobes, finds a ready entrance into the cavity of the gland, from which it may be absorbed.

" If a pipe be introduced into the gland, and alcohol be injected, and the organ immersed in strong spirits, or a solution of alum, a large cavity will be filled, which I shall call the reservoir of the Thymus.

" This reservoir forms a general communication between the different lobes; it begins from the inferior part of the thoracic portion, and extends from thence into the extremity of the cervical.

" The reservoir does not maintain a straight course, but passes spirally, or in a serpentine direction, through the thoracic part of the gland, and is somewhat more direct in the cervical portion.

" With regard to its size, it varies in different places, but generally is the largest near the centre of the thoracic, and it is least at the communication of the cervical with the thoracic part of the gland.

" In the cervical portion it increases, but is less than in the thoracic, yet it still may be distinctly traced.

" When opened, after having been injected and hardened, its internal surface appears to be lined by a smooth membrane; but if it be at once dissected in water, this lining membrane is found to be of the mucous kind, for it is rather villous than smooth, and instead of having a few red vessels, when filled with a vermillion injection, it is found to be highly vascular, and the arteries which are distributed to it may be seen meandering upon its surface and minutely dividing so as to redden every part of it.

" Its interior forms ridges, which are produced by small ligamentous bands, which cross the surface of the reservoir in various directions and encircles the mouths of the pouches; these bands are formed for the purpose of keeping the lobes together, of preventing an injurious yielding of the parietes of the cavity, and to give strength to resist too great an accumulation of the secretion.

" When the reservoir is floated in water, a number of small openings appear upon its internal surface, and if a probe be introduced into these, it passes into the pouch at the roots of the lobes, so that by these apertures, the secreted fluid escapes into the reservoir."—Pp. 27-30.

From these facts, Sir Astley has drawn the following general conclusions regarding the organization of the Thymus Gland:—

" *First,* It is composed of a gland on each side, united only by cellular membrane. *Second,* It is formed of two ropes which can be with care unravelled, and they are of considerable length. *Third,* The ropes are constituted of small and large lobes which appear as knots upon the rope. *Fourth,* These are disposed in a spiral or serpentine course, from the upper part of the cervical, to the lower extremity of the thoracic portion. *Fifth,* Each portion of the rope is a secretory structure. *Sixth,* The lobes contain secretory cavities or cells, which may be readily shewn by filling the gland with alcohol, air, gelatin, or even wax. *Seventh,* A pouch of communication exists between the lobes and the reservoir. *Eighth,* The gland has a central cavity or reservoir. *Ninth,* This cavity is not straight, but spiral or serpentine. *Tenth,* The reservoir is lined by a very vascular mucous membrane. *Eleventh,* The ropes of the gland pass in a spiral or serpentine direction around the mucous membrane, which lines and principally forms the reservoir, and these ropes being united by that membrane to each other, assist in forming the cavity."—Pp. 32-33.

In speaking of the arteries, veins, lymphatics, and nerves of the *thymus*, it appears that it is extremely difficult to inject the thymic lymphatics in the human subject; and here we are compelled to avail ourselves of the evidence only furnished by comparative anatomy.

In considering the uses of the thymus gland, Sir Astley differs from Mr Hewson in regarding it as allied to the lymphatic or absorbent glands; from which, Sir Astley remarks, it is distinguished by being a conglomerate not a conglobate gland, by being loose in tissue, and by presenting large cells, while those of the lymphatic glands are extremely small. Hewson, indeed, was misled in this matter by his eagerness to establish his hypothesis about the formation of the nummular particles of the globules of the blood.

From a very accurate analysis of the thymic fluid by Dr Dowler of Richmond, it appears that 100 parts contain 16 of solid matter in the shape of incipient fibrin, albumen, mucus, and muco-extractive matter, and some muriate and phosphate of potass, and phosphate of soda,—in other words, all the component parts of the blood. From these facts, conjoined with its internal structure, its large size in early life, and subsequent obliteration, Sir Astley offers the following conjectures on its formation.

> " As the Thymus secretes all the parts of the blood, viz. albumen, fibrin and particles, is it not probable that the gland is designed to prepare a fluid well fitted for the fœtal growth and nourishment from the blood of the mother before the birth of the fœtus, and consequently before chyle is formed from food, and this process continues for a short time after birth, the quantity of fluid secreted from the Thymus gradually declining as that of chylification becomes perfectly established?"—P. 44.

Disease of the *thymus* gland is rare, as might be expected from its obliterated state in adult life. Accordingly, Sir Astley Cooper has, in the course of more than forty years, met with only a single example of disease of this organ. This occurred in a young woman of 19, who laboured under severe dyspnœa and frequent fits of orthopnœa. At this time a swelling was found occupying the inferior part of the neck, proceeding from the upper opening of the *thorax*, and rising above the clavicle on each side. Everything that art could suggest was done without avail. She became anasarcous, and died exhausted. On inspection, the following appearances, showing that it was a complication of diseased enlargement of the *thymus* and thyroid glands, were found.

> " The trachea was involved in the tumour, and its sides were compressed by it, so that its transverse diameter was somewhat diminished. The *arteria innominata* was placed behind it, and the left subclavian, and left carotid arteries to its left side, it surrounded the *vena innominata,* and upon cutting into the vein, the diseas-

ed gland was found projecting into its cavity, and upon making an incision into the swelling, the reticular texture of the gland was found to be filled by a white pulpy substance."—P. 46.

This short but valuable treatise is embellished by five plates, containing at least fifty beautiful lithographic figures, illustrating the organization of the gland, and the disposition of the minute lobes of which it consists. Most of the originals from which these delineations were taken, are preserved in the valuable collection of the author.

ART. V.—*A Practical Treatise on Uterine Hemorrhage, in connection with Pregnancy and Parturition.* By JOHN T. INGLEBY, Member of the Royal College of Surgeons in London, one of the Surgeons to the General Dispensary, Surgeon to the Magdalen Asylum, and Lecturer on Midwifery at the School of Medicine in Birmingham. 8vo, Pp. 276. London, 1832.

THOUGH the subject treated in this work is familiar to all practitioners in the obstetric art, and but little difference of opinion exists among them on the more important views of its true nature and remedial treatment, yet we consider the profession indebted to any author who brings before the public the results of his own experience, acquired either in private practice, or in those institutions set apart for obstetric cases. The importance of a correct knowledge of uterine hemorrhage is not limited to those engaged in this department of the profession ; as there is scarcely any practitioner whose services may not at times be required in an emergency, where not only his knowledge of this department, but his presence of mind and energy, are pre-eminently required. We are of opinion, that, although some progress has been made within the last ten years in extending a knowledge of the important general doctrines of obstetrical science to all classes of students, yet a great deal remains to be done ; and so long as the public considers the individual in possession of a recognized title in our profession, as entitled to support in that department to which he chiefly directs himself, yet gross and mischievous ignorance in another must be a serious objection to his utility as a general practitioner. An elementary knowledge of midwifery is incumbent on all students ; and we should hesitate in granting the honours of the profession to any one who could recommend as a cure for the hemorrhage from placental presentation, tying the iliac arteries ; yet we know that this has happened more than once. We merely allude to it now, and trust that enough has been said to direct the attention of those interested in the matter.

It is therefore by no means without justice that Mr Ingleby, in his preface, impresses the necessity of a competent knowledge of obstetrical principles and practice in all medical and surgical practitioners, and the urgency of the present Authorized Boards of Academical and Corporate Authority, taking the responsibility of insuring the public, that competency in candidates for licences to practice is duly enforced. It is idle, he justly remarks, to denounce the ignorant midwife, so long as we have no laws to regulate this practice among ourselves and our students. These complaints, however, apply with justice chiefly to the other side of the Tweed; and while the only measure that was wanting in this respect to render the Edinburgh graduate a fully qualified person has been lately adopted, it must be allowed, that the Edinburgh College of Surgeons, by having for a long time enforced the necessity of the licentiates not only studying midwifery, but satisfying the college by examination, that they had done so, have shown a much deeper interest in the welfare of the public, and a more prudent and judicious mode of insuring it, than any other of those boards, to whom the task of ascertaining the qualifications of practitioners has been confided. In London some change in this respect is most urgently required. Though we do not pretend to specify any particular plan, it is manifest, that, so long as neither of the Colleges take any means of ascertaining the competency of candidates in this department of medical knowledge, the practice of midwifery must be the great field for ignorance, quackery, and every species of pernicious charlatanism. We do not see how the oft-repeated argument of impaired dignity should interfere in this case. Where the lives of many fellow-creatures are at stake, and where it is well known the future health and comfort of many females depends on the neglect or attention, the ignorance or knowledge, of the obstetrical attendant, it would be surely creditable to manifest at least a moderate degree of interest in this matter. Better times, we trust, are at hand. The Obstetrical Society may be of some utility, and induce some of the public bodies at length to bestow on it the attention which it merits.

The etiology and the pathology of uterine hemorrhage are to be sought not only in the anatomical peculiarities of the *uterus* and its connection with the *ovum*, but in the changes induced in the general circulation, and certain of its parts by pregnancy. The gravid and puerperal state is, in savage life and in ordinary circumstances, by no means necessarily morbid, and it cannot at the most be regarded in any other light than as a mere modification of the usual state of the organs. It is, nevertheless, under the influence of the habits and indulgencies of polished life, and the irregularities incident to civilization, a state which predisposes to morbid action; and when causes are applied, effects cannot fail to ensue. It hence results that several of the causes of uterine hemorrhage precede parturition considerably, and are to be found in states of the system connected with the habits of the individual, and the mode of life which she pursues. Of the great influence of these circumstances, Mr Ingleby seems to be perfectly aware; and he studies to impress on his readers the necessity of watching and counteracting their effects.

It is difficult to say whether, after the most careful research, we shall discover the exact nature of all these causes; but inquiry is at least more likely to inform us than indolence and inattention; and it is a lucky circumstance for our ignorance, that rarely any single cause produces a serious effect, and that the concurrence of many is in all cases requisite. The circumstances which dispose to uterine hemorrhage are much in this condition; for scarcely any one cause can be individually accused of producing the catastrophe.

One of the most powerful, perhaps, is that considered by Mr Ingleby in his fifth chapter,—difficult indeed to define, but not the less real in its existence, nor the less certain in its operation. The author does not give it a name, because, we believe, that it is of that general and vague nature which it is impossible to specify. To call it *menorrhagia*, after the example of the nosologists, is merely to distinguish a disease by a single symptom, or to characterize a morbid process by one of its effects. Mr Ingleby attempts to illustrate the nature of this state, by appealing to the effects of plethora and congestion on the system, and the advantages resulting from means employed to counteract them. Whether it consists in mere general plethora operating on the uterine circulation, or plethora stimulated by some local irritation to vent itself in this direction, it is not easy to say. Mr Ingleby seems to think the former view probable, when he expresses his belief, that "the activity of the uterine circulation sometimes exceeds the demands of natural gestation;" and that "this either tends to a rupture of a vessel and extravasation of blood, incompatible with the connection of the *uterus* and *ovum*, or relieves itself by an aqueous deposition within the membranes."

The opinion of Dr Lee, that hemorrhage is almost invariably connected with a morbid state of the *ovum*, is entitled to regard from the well known research of that gentleman, who, we have good reason to know, never makes a statement not well supported by observation. It may indeed be argued, that the morbid state of the *ovum* may be the result of some previous morbid action in the *uterus*, or some derangement in its functions; but one of the strongest arguments in its favour is the fact, that *plethora* alone does not in many pregnant women invariably produce either hemorrhage or abortion. In point of fact, the observations of Mr Ingleby lead to the conclusion, that hemorrhage occurs in two classes of women,—the one consisting of those who, using little exercise, are well fed, rather above than at the healthy rate, and whose natural tendency to sanguine congestion is augmented by the constant stimulation of the digestive organs; and the other consisting of those whose constitutions indicate some local determination, and who, with the obvious marks of feebleness and delicacy, have, from their condition in life, neither the means of cure nor prevention.

We approve highly of the rules deduced from these facts and considerations by Mr Ingleby, who recommends as a precautionary method, small bleeding, moderate diet and quiescence, and also adduces instances in which local bleedings averted on one occasion a hemorrhage which had occurred in another. In short, it is of the utmost importance for a patient who has had hemorrhage, or who is thought likely to have it, from previous hemorrhagic tendency, to be vigilantly watched during the period of gestation, and for the medical attendant to control symptoms as they rise.

The precaution requisite during pregnancy is not less so at parturition; and Mr Ingleby has properly devoted the sixth chapter to this subject. The great object is to observe a just medium between total neglect and officious and absurd interference. Mr Ingleby recommends that the process be allowed to advance uncontrolled wherever there is reason to think that all is natural; and he would not retard delivery unless where there is ground to fear laceration of the *perineum* or a quick labour, where hemorrhage has formerly occurred from retention of the placenta. On the latter part Mr Ingleby observes:—

> " When the result of former labours leads to an expectation of hemorrhage, the practitioner should examine the *uterus* above the *pubes* immediately upon the birth of the child, and endeavour to obtain, without delay, its speedy and effective contraction. In addition to the bandage, an uniform and well-regulated pressure, by means of one or both hands, so as to confine the *uterus* within the false *pelvis*, and prevent *coagula* from collecting and distending its *parietes*, is admirably adapted for this purpose."—P. 28.

In short, the general conclusion may be stated to be, that since rapid labour is occasionally a cause of hemorrhage, and as this, Mr Ingleby believes, is likely to be favoured by all violent voluntary efforts, and all officious interference on the part of the attendants, he censures their use, and recommends rather that delay should be observed.

After considering in separate chapters the influence of vomiting as a cause and symptom of uterine hemorrhage, of syncope in connection with hemorrhage, the efficacy of opium, cold, and uterine contraction, as means of arresting hemorrhage, Mr Ingleby, in the 12th chapter, enters on the examination of the circulation of the ovum, in which he seems to incline to the opinion, that there is no direct communication between the utero-placental vessels and the proper vessels of the fœtus.

The consideration of deficient and redundant proportion of blood in the vessels, as a cause of hemorrhage, is again resumed in the fourteenth chapter, on *Abortion, both under the ordinary and the diseased state of the ovum* ; and the general conclusion at which Mr Ingleby arrives is, that abortion is more frequently occasioned by redundancy than deficiency of blood. He admits, however, that abortion is very common in persons of irritable habit, as in these cases the circulation in the *ovum* seems to acquire an activity incompatible with its connection with the *uterus*. This consideration might have led Mr Ingleby to infer the existence of some other cause of uterine hemorrhage and abortion than mere *plethora*, whether general or local; for the distended state of the vessels must have been induced by their susceptibility to become overloaded, and this again must have arisen from some preternatural or morbid irritability, excited in all likelihood by the constant stimulus of some unsound condition either of the *uterus* itself or of the *ovum*.

The treatment of these two opposite varieties of abortion, Mr Ingleby adapts to their supposed causes. Cases seeming to depend on a *defective* supply of blood, he recommends to be treated by the cold bath, nutritious diet, moderate exercise, regularity of the bowels, and light tonics. Those, on the contrary, which appear to be connected with *redundancy* of the circulating fluid, require frequent bleedings, spare diet, rest, regulated temperature, and the seasonable use of opiates.

As the question of what is to be done in the way of manual operation or removal of the *ovum*, Mr Ingleby thinks, in opposition to Baudelocque, that the plug cannot be used after the third month ; and that rupture of the membranes is out of the question before the fourth month, and is rarely justifiable before the sixth month ; but, notwithstanding the difficulty of introducing the hand into the uterine cavity before this time, he informs us he would not hesitate to perform the operation when practicable, after the completion of the fourth month, provided the hemorrhage threatened the extinction of life ; and under these circumstances only, since the placenta is liable to be retained when the ovum is only partially expelled. All manual operations, in short, he deprecates previous to the fourth month.

By *Accidental Hemorrhage*, (chap. 15) which next comes under consideration, Mr Ingleby means *Hemorrhage from partial separation of the after-birth from the point of its ordinary attachment during the last three months of gestation.* In cases of this order, the hemorrhage may proceed from two different sources; 1*st*, from the large vessels which supply the placenta, and 2*d*, from the small vessels which supply the *decidua*, or those which are in slight connection with the membranes. To the first, which is the most important, though the least common, he directs particular attention.

> " The remarks already made respecting the causes of abortion, in a great measure apply to our present subject. In addition to an excited or disturbed state of the utero-placental circulation, occasioned frequently by a stimulating diet, or impressions acting upon the mind, it may be remarked, that muscular exertion, external injury, or whatever prematurely excites the contraction of the uterus, may detach the ovum, and produce hemorrhage. Some effusions, I think, may be ascribed to an unusual tenuity of the edge of the placenta; and when separation, even of a very small portion, takes place, a further detachment may be occasioned by the blood being insinuated under an additional part of the mass: the blood, in travelling to the *os uteri*, easily detaches the membranes, the gelatinous deposit is readily dispossessed, and the hemorrhage appears externally. Our prognosis, (ever to be guarded), must, in addition to the circumstances already mentioned, be determined by the patient's previous habits of life and powers of constitution; by the state of the circulation; and the effect produced upon the general system. The propriety of making an early examination *per vaginam* in these effusions occurring in advanced gestation, more particularly when not characterized by pain, is too obvious to be insisted upon. To neglect this examination might be dangerous in the highest degree. Generally, in accidental hemorrhage, the membranes will be felt presenting at the *os uteri*; but in many cases we cannot distinguish them at all, unless the hand is passed into the vagina." Pp. 122-123.

The mode of treatment to be employed in this case is the same as that recommended in a former chapter for hemorrhage threatening abortion, viz. venesection, rest, low diet, and opiates. Besides these measures, however, the propriety of other two occupy the attention of Mr Ingleby, namely, rupturing the membranes in preference to immediate delivery by turning; and the use of the plug during asphyxia or syncope, until the *os uteri* is sufficiently relaxed. Mr Ingleby, after a long consideration of these questions, inclines to the practice of turning for the former question; and on the latter, though not against the plug in all cases, he thinks, nevertheless, it will very rarely be requisite.

The important and interesting subject of *Unavoidable Hemorrhage*, as Mr Ingleby denominates that which results from attachment of the placenta over the inferior part of the womb, next undergoes a most minute and elaborate investigation. The theory of this species of hemorrhage is properly explained in the following manner:—

"Before the fifth month of pregnancy, the developement of the uterus is confined to its fundus and body; but after the fifth month, the distending power of the ovum is exerted upon the neck of the organ, which dilates circularly from above—and at last a change is wrought upon the *os internum.* As the growth of the placenta, under this attachment, does not keep pace with the progressive unfolding of the *cervix uteri*, hemorrhage will necessarily result, at any period after the fifth month is completed up to the accession of labour, arising earlier or later according to the precise situation of the mass. In persons who have borne many children, the neck of the uterus has been observed, in some instances, to shorten as early as the fourth month. It is obvious that a detachment may happen even at that early period. It has been known to occur as early as the third month.

"It would appear, then, that this part of the mass will be withdrawn from its attachment, in exact proportion to the developement of the cervical part of the uterus, and the vicinity of the margin of the placenta to the *os internum.* And thus, the placenta will undergo a continuous separation corresponding to the successive expansion of the neck, until nearly the whole of its surface is dissevered from its uterine connexion. From this it is evident, that when the placenta is affixed either to the *cervix* or to the *os uteri*, whether wholly or partially, the vessels will become exposed on each successive detachment, and the ultimate safety of the patient will depend upon delivery by turning the child, excepting, perhaps, in two peculiar states, (to be alluded to presently), in which rupture of the membranes is the only treatment offered to us in one case, and the safest, and therefore the most eligible in the other. In a few isolated cases, occurring in persons of very robust constitution, the uterus has been known to acquire a degree of contraction sufficiently vigorous to expel its contents with safety to the patient, and without the interposition of art. A contraction short of this must always be injurious. The placenta may even undergo total detachment, and still the child may be expelled by the natural efforts. Smellie gives us several cases. In one instance of this kind, while the practitioner was preparing to deliver, the whole placenta was expelled first, and instantaneously followed by the child. Such an occurrence, however, is too rare to justify our placing any dependence upon it. Instead of the womb being sufficiently active to expel its contents, its energies are usually so much impaired, if not completely paralyzed, by repeated hemorrhage, that when committed to nature, the result has almost invariably been fatal."—Pp. 140, 141.

In the treatment of this order of cases two methods are proposed, first, to check the flow of blood; and secondly, to promote delivery as rapidly as possible. It is supposed that the first object may be attempted by the recumbent position, cool regimen, the neutral salts, the local application of cold, gentle evacuation of the bowels, and the temporary use of opiates; and this method Mr Ingleby is disposed to regard as admissible and efficient. Venesection, as a part of the early treatment, he also mentions, but allows that there are few cases in which it is admissible.

We believe, nevertheless, that the first indication is generally to be resolved in the second, and that all other means are temporary, palliative, and inefficient, excepting speedy removal of the *ovum*. How, indeed, can it be otherwise, considering the position of the placenta, liable at every motion of the neck and orifice of the *uterus* to be detached more or less extensively? The chief question, then, for consideration is the time at which delivery should be attempted; and though this operation may be undertaken prematurely, and be therefore mischievous, Mr Ingleby properly prefers the too early to the too late, as the least of the two evils; and he recommends that the practitioner should not wait until the *os uteri* is so loose and flabby or open as to admit the hand without resistance, when, he remarks, the chances of successful delivery will be much diminished; because, as he afterwards justly observes, "in the exact ratio as the *cervix uteri* is successively developed, and the *os externum* progressively dilated, will an additional mass of placenta be detached from its connecting medium, and the hemorrhage necessarily be renewed." We are therefore not to look for pain as a guide; because the loss of blood necessarily deprives the womb of contractility and irritability. An experienced accoucheur, in whose practice about twenty cases of hemorrhage from the low attachment of the placenta occurred, informed Mr Ingleby, that those women who were delivered at an early period of gestation recovered; but when delivery was postponed to a late period, the result was fatal. In short, the rule should be to deliver as soon as the nature of the presentation is ascertained, and on no account to leave the patient undelivered, or, in other words, to allow her to bleed to death undelivered.

Hemorrhage is occasionally connected with plurality of children, twins or triplets, for example. In such cases, the first and most indispensable rule is to ascertain the existence of a second child, and the next to determine the presentation. If the arm presents turning should be accomplished; but when the presentation does not require to be changed, what course, says Mr Ingleby, should be pursued when the uterus makes no expulsive efforts? He feels dissatisfied with the rules of authors respecting the management of this form of labours, which it must be admitted are contradictory and unsettled. Adhering, however, to the general principle, of not permitting unnecessary delay, he is disposed rather to wait until the *uterus* manifests a disposition to act, while he carefully guards against the occurrence of hemorrhage. The advice of Gooch is, on the whole, the most judicious.

> " 'Be prepared for the occurrence of hemorrhage in these cases, and manage the labour so that this danger may be guarded against by all the natural powers. Make the uterus, if possible, expel the head, shoulders, body, and limbs of the child. Thus you will have the *fundus uteri* close on the heels of the child; irregular contraction of the uterus, therefore (which is most frequently owing to bad practice), cannot take place. I have compared notes with those who make it a rule to extract the second child immediately after the birth of the first, and I find that they are often embarrassed by irregular contraction of the uterus and hemorrhage; neither of which will happen if the uterus is left to expel every part of the child.'* By this mode of conducting the labour, we ensure the tonic contraction, and consequently prevent hemorrhage. When the distension has been great, contractions will but slowly arise; and when they do not occur, the placental vessels, if not larger than common, being double in number, a prodigious effusion of blood may escape in a very short period of time. Three of the most serious hemorrhages which have occurred in my practice, succeeded the birth of twins, and could be distinctly referred to the circumstances attending the delivery of the second child. These patients recovered. Two of my professional friends were less fortunate under circumstances in other respects very similar. Each of these gentlemen lost his patient from hemorrhage speedily after the removal of the placenta. Under a vigorous action of the womb, the expulsion of the second twin may speedily follow that of the first, probably in less than half an hour. But when, after a respite, the pains are feebly renewed and increase in a gradual manner, the process of the second birth, committed entirely to nature, has in my own practice averaged from six to eight hours, and the patients have uniformly done well. Generally speaking, however, the progress of twin cases is slow from the onset of labour."—Pp. 170-171.

The observations in the 19th chapter, on *the Ordinary Management of the Placenta*, which are judicious, we omit for want of space, and proceed to the 20th, in which the important subject of *Retention* is discussed.

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* Compendium, by Skinner, p. 259 et seq,

This casualty may depend, it is well known, on three causes; *inertia*, indicated by the bulky, flaccid, and uncontracted feeling of the *uterus*, and the absence of pain; *2dly*, the partial, irregular, or spasmodic action of the uterine fibres, indicated generally by the feeling of part of the uterus being contracted and painful, while the *os uteri* is open, flaccid, and unresisting; and *3dly*, morbid adhesion, which is to be conjectured from the history of the patient,—having had previous attacks of abortion or hemorrhage, and from the absence of the other signs.

In the first case the placenta must be immediately removed, and every practicable means employed to excite the *uterus* to contraction. In the second the practice is unsettled; but Mr Ingleby speaks favourably of opiates, and mechanical stimulation by the hand, or, if stricture exists, dilatation. In the last case the practice is equally unsettled, unless what contributes in the easiest and most gentle way to destroy the morbid adhesion and remove the placenta. All attempts, Mr Ingleby remarks, ought to be slow and deliberate.

The 21st chapter contains some useful observations on *Disruption of the Placenta*, a more frequent cause of illness, both immediate and future, than is generally believed. To the officiousness and impatience of the attendant in pulling the chord, and to culpable neglect in not examining the exact condition of the placenta when withdrawn, this is generally owing. "Nearly all the cases which I have had an opportunity of seeing, could be traced to mismanagement; and the many serious results which I have known the rash and unskilful removal of the placenta to occasion, justify me in alluding very strongly to this point. Several of the individuals, thus circumstanced, died, and the lives of the others were reduced to the most imminent peril." It is doubtful whether the absorbents really at any time remove the placenta in whole or in part; but we should not look upon this as a resource either certain or safe. In general it comes off in a half dissolved, corrupted state, after being retained twenty or thirty days. Sometimes a troublesome and alarming hemorrhage is kept up by the retained portion; but in general the vascular connection ceases, and the effects are rather of a general character, consisting of fever, with great debility. At other times inflammation of the uterine vessels is induced, leading to the formation of pus; and the lymphatic system is likewse deranged.

The following are the indications of treatment which the author advises. 1. To arrest hemorrhage, and to obtain the detachment of the adherent portion; 2. To correct fetor, and obviate as far as possible the effects of decomposition; 3. To allay inordinate pain, and irritation in general; 4. To support the constitutional energies; 5. To remove inflammation of the venous and absorbent system when found to exist. If, after an interval of one or two hours, we find the *uterus* contracted to its proper size, we have little reason to dread any troublesome hemorrhage; but it is known to most practitioners that an alarming degree of it is occasionally found under such circumstances. It arises, we think, from an over active circulation in the small vessels, and instead of having recourse to the introduction of the hand, as advised by Mr Ingleby, we have found the external application always sufficient to arrest it. Dr Gooch's remarks on this subject are worthy of attention.

The remarks in the 22d chapter, on the *States of the Uterus after Delivery*, we must be satisfied with generally recommending to the attention of the accoucheur.

The 23d and 24th chapters are devoted to the hemorrhage consequent on ordinary labour; and we agree with him in thinking that it is not to the quantity lost, but to its effects on the system, that our attention must be directed. Hence the propriety of watching our patient for some time, and not trusting altogether to the ostensible discharge; as the most alarming cases are those in which, from clots at the mouth of the womb or in the vagina, a large accumulation takes place in the cavity, which becomes enormously distended from deficient tone of the organ. In such a case, the timely and judicious aid of the attendant is of the most decided advantage. " In severe cases the *inertia* is for the most part very general, yet not always. So partial has it been in some instances, that hemorrhage has been known to prove fatal where there has been no external discharge." P. 281. The further progress is now described: " The patient becomes pale, complains of being very faint, feels sick, perhaps vomits; the heart beats fully and rapidly; the exhaustion rapidly increases. The practitioner no longer finds the contracted *uterus* in hypogastrio; the abdomen is occupied by a soft and large tumour, occasioned by the *uterus* being distended with blood." P. 281. The symptoms soon become urgent; and Blundell details them correctly as " a restless disposition to change posture, a long-continued cessation of the pulse in the wrist; a gasping respiration, like that produced by running, and a jactitation of the arms and legs, joined with a feeling of the most oppressive anguish." P. 234. Death may follow rapidly; and not a moment is to be lost in relieving the patient. The *uterus* must be emptied, contractions excited, and the powers of life supported by all means at command.

In such cases we have high authority for introducing the hand into the *uterus*, cautiously and steadily, aware that haste and violence may be more injurious than the continued discharge. Burns never lost a patient in this state, and he attributes his success to the prompt introduction of the hand. The latter is rather to be considered a passive than active agent in the *uterus*, and it is less to the expulsion of the clots than to the contraction of the *uterus* that we are to trust.

With respect to stimulants conveyed within the *uterus*, Cruickshanks recommended the introduction of a sponge moistened with lemon juice or vinegar ; and Capuron advises the same treatment when friction and cold fail. The practice recommended by Evrat, that a peeled lemon should be conveyed into the womb, and the juice squeezed out under the idea that the citric acid will irritate its surface,—Mr Ingleby has known to be employed without the slightest effect. We do not consider these plans quite safe, and we are satisfied that they are almost useless. If the discharge continues in a less degree, cold astringent injections are of great service.

Mr Ingleby speaks favourably of a practice in those cases to which, *a priori*, few will be disposed to attach much weight, viz. intercepting the current of the blood through the inferior part of the aorta. Mr Blount, a colleague of Mr Ingleby, nevertheless, relates a case in which the exhaustion was very great, the pulse being exceedingly feeble and frequent, and the patient appeared sinking. " I now placed my hand on the abdomen just above the *uterus*, and from the spareness of habit, easily distinguished the pulsations of the aorta, and made pressure so as to intercept its current of blood. This was continued with increasing advantage for half an hour, and as the patient was much revived, I now withdrew my hand. Upon the withdrawing of the hand the sinking immediately returned, attended with giddiness in the head, and a slight return of the hemorrhage. Twice during this period I allowed the blood to pass to the lower extremities, but with the same unfavourable results as before."

The greatest care is required in carrying our patient through this alarming stage ; but we must not suppose the danger wholly removed by a return of the pulse, and some degree of bodily strength. Besides the immediate effects of the loss of blood, there is a subsequent stage scarcely less alarming, to which the attention of the profession has been well drawn by Dr M. Hall. It is now tolerably well known to the profession ; but as its outward symptoms are somewhat at variance with its real cause, the most judicious treatment is not always adopted ; whereas in the first or immediate effects of the loss of blood no one can overlook the cause. Hence the debility is scarcely less, and sudden dissolution has sometimes been the immediate consequence of muscular effort on the part of the patient, or of her being too suddenly raised from the recumbent into the erect position. The nervous system is much disordered ; in general the sensibility is heightened, light and noise being very disagreeable, and the slightest emotion disturbs the patient. The intellect is variously affected,—generally weakened. There is often delirium, sometimes slight, often continued; noises in the head; flashes of light; sense of pressure or tightness round the head.

Such are the most frequent effects of loss of blood. But to these we must also add, as occasional consequences, coma, convulsions, mania, and paralysis. While so much doubt exists as to the immediate effects of depletion, even on the state of the vessels in health, we need not be surprised at the difficulty of solving the most complicated question of its varied effects in disease. The curious and important inquiry revived by the late Dr Kellie, on the effects of depletion, will not be overlooked by some of those individuals now engaged in physiological research. We do not know any one which promises a richer harvest, or one which bears more directly on so many questions of physiology, as well as pathology and therapeutics. The experiments lately instituted here and in Leith, on venous injection in cholera, will lead the attention of some individuals to resume the investigation of the whole subject. While we doubt whether the saline transfusion will add greatly to the average curability of the malignant cholera, and are not free from suspicion that it is attended with considerable danger; we have seen enough to warrant a more decided infusion of blood in cases of anæmia than has been hitherto attempted, instead of the cautious introduction of a few ounces,—when conducted with delicate instruments, and by one accustomed to the operation. We have witnessed the injection in cholera to many pounds of a weak saline solution, (45 in 24 hours,) and by the common injecting instrument, to which a small silver tube was attached. The stimulant effects on the heart and pulse, the filling up of the features, improved colour, voice, restoration of heat and strength, are too decided and immediate to be doubted. If such effects, therefore, are found in a person labouring under a morbid poison, how much more certain and permanent would the effects be in a case where all we have to contend with is simply the loss of fluid, which it is in our power easily to supply. We consider it a remedy better adapted to the first than to the second stages after the loss of blood. Unfortunately it has too frequently happened that the proper period of adopting this measure has been allowed to pass by; but the delay hitherto in having recourse to it was caused less by the indecision of the practitioner than by the difficulty in procuring the requisite means. These we now find to be of less consequence, and we rely confidently on the good effects of a more early and decided venous injection. Two or three pounds may be easily tried. Mr Ingleby relates a case in which transfusion to the amount of a few ounces was attended with good effects. In less than five minutes the pulse of the opposite arm was more distinct than before the operation; in about twenty minutes consciousness in part returned, and after the lapse of an hour the general improvement was very marked.

Mr Ingleby does not attend sufficiently to a distinction which we consider of great importance, not only in a physiological, but in a curative point of view; he confounds the anæmia described by MM. Hallé, Andral, and Dr Combe, with that particular affection described by Dr M. Hall. In addition to transfusion, galvanism is recommended by Dr M. Hall in the former, but it is inapplicable to the latter.

It is satisfactory to find, that our author is more cautious in the exhibition of the ergot in cases of hemorrhage, than some late writers on this subject. A great majority of practitioners are now satisfied that it does possess those powers of exciting uterine action which have been attributed to it; but they wisely consider, that it is only in a limited number of cases that its use is applicable. When the *os uteri* is well dilated, or rather after the head has made some progress in the descent into the pelvis, while the pains are inefficient and the powers are declining, we have often witnessed the speedy and undoubted effects of the ergot in exciting uterine action. One of the most remarkable features is the cessation of the action immediately after the expulsion of the uterine contents. We are of opinion, that it is only in ordinary labours that we are warranted in having recourse to it, and we doubt the propriety of the proposal expressed in the following terms:—"Perhaps it might be administered with advantage in placental presentation, directly before the hand is introduced into the uterus, in order to induce that efficient and permanent contraction which is essential to the patient's security." This is dangerous practice, and likely to be followed by the most alarming consequences. A quiescent uterus is the accoucheur's safety in turning; and the unnatural and violent expulsive efforts induced by the ergot while the hand is in the cavity, would in all probability lead to the rupture of the organ, or at least speedily satisfy the operator that he must desist until the action is allayed. In cases of retained placenta we have not found it of any service. If recent, the hand judiciously used rarely fails; if late the ergot does not appear to act on the uterus. We agree with him in thinking, that the different opinions entertained of it are to be explained often by the variety in the qualities of the ergot. Milk is considered by some to counteract its effects, which are always most decided when given when the stomach is empty.

This work is avowedly addressed to those members of the medical profession whose previous education is implied in the directions given in the treatise. But we conceive that there is a very important class of practitioners who might be greatly benefited by a condensation and simplification of its rules; and sure we are, that Mr Ingleby could not better devote his talents and time than in instructing in such a way that numerous class of female practitioners, upon whose knowledge and dexterity much will always depend. In this we might borrow with advantage from our continental neighbours, and until we do so, we must not expect to find in this class the acquirements of a Boivin or Lablache. The imperfect and hasty instruction which they obtain is not kept up when they engage in practice; and we are of opinion, that a manual for occasional reference might be of great benefit to them.

The work, which shows that Mr Ingleby has observed assiduously, read extensively, and reflected much on the causes and varieties of uterine hemorrhage, is highly creditable to his diligence as a teacher of the obstetric art. It nevertheless betrays a want of method and precision, which we hope to see removed in a subsequent edition; and in some parts the author is too diffuse for the practical reader. If Mr Ingleby would take the trouble to condense some of the discussions on the preliminary states which dispose to uterine hemorrhage, and abridge and consolidate such chapters as the 6th on hemorrhage, and the 14th on abortion, we are confident he would add much to the value of his book, and render both the pathological and therapeutic parts more simple, methodical, and decided. Indecision, we conceive, is one of the worst evils in the practice of medicine, and especially in that of midwifery; and next to judging accurately, it is of the utmost consequence to act decidedly and promptly. Our opinion of Mr Ingleby induces us to be candid in saying, that he would enhance in a very great degree the value of his work to obstetric practitioners, if he would arrange some of his reasonings in such a manner, that they could at once see what is the reason of every particular method of practice, and know at once in every case what it is requisite to do. In the present practice of midwifery, as it is taught in books and lectures, what is most to be complained of is the multitude of discordant opinions, and contradictory and unsettled modes of practice in every kind of cases. Of modes of treatment also, and ingenious and sometimes sufficiently bold practices, there is no lack. But there is a sad want of selection and adaptation; and the young or inexperienced accoucheur is too often bewildered amidst the equiponderant authorities by which different remedies are recommended. That this is the case, is no fault of Mr Ingleby; but we should wish much to see him, or some equally assiduous practical inquirer, endeavour with energy and judgment to fix and determine the state of the art.

Art. VI.—*Views of the Pelvis, &c.* By John Houston, Demonstrator of Anatomy in the College of Surgeons, Ireland, &c. Three Lithographic Plates. Oblong Folio. Dublin, 1829.

Mr Houston's publication is intended to aid the student in his endeavours to make himself master of a perplexing piece of anatomy, the relative position of the contents of the pelvis, and to freshen his recollection of them when opportunities of dissection are no longer within his reach. The three views of which it consists represent the male and female pelvis, and its contents, as they appear when a section of them is made in the mesial plane of the body. They exhibit the situation of the pelvic viscera relatively to each other in that plane, their depth, or the distance of each from the surface, the extent to which the peritoneum descends in the pelvis, the parts of the viscera covered or uncovered by that membrane, &c. The third plate is a view of the pelvis of a male child seen in the same way. It is difficult to make a section of the soft and flaccid contents of the pelvis without destroying their shape, or deranging their position to such a degree as renders the preparation unfit to serve as a copy for the draughtsman. Accordingly, such plates as represent sections of the pelvic viscera are for the most part to be regarded as mere plans and diagrams rather of the parts as they are supposed to appear in a section than as faithful delineations of nature. In order, however, to insure accuracy by drawing from actual preparations, in which a determinate figure should be given to the hollow viscera, and the true position of all the parts maintained, Mr Houston, before making a section, distended the hollow organs moderately with alcohol, and kept the whole preparation immersed in the same fluid till such time as the naturally soft and yielding tissues had acquired sufficient rigidity and resistance.

These preparations are now preserved in the Museum of the Royal College of Surgeons in Ireland.

In the explanation which accompanies the plates, exact measurements are given of the size of the different objects, and their distances from each other; though the numbers assigned will not be found to apply exactly in every case, yet even an approximation to the exact truth is desirable, were it only because it affords something definite to fix the attention and impress the memory.

PART III.

MEDICAL INTELLIGENCE.

PHYSIOLOGY.

On the Uses of the Thymus Gland. By Dr William Forrester Bow, *Alnwick.*—(*Notions of Fever and of Nervous Action,* 1829.)—Since the foregoing account of the work of Sir Astley Cooper on the Thymus Gland was printed, our attention has been directed by Dr Bow to a passage in his work above-mentioned, in which he conceives he has anticipated Sir Astley Cooper in the uses which that able anatomist and surgeon assigns to the *thymus gland.* We freely confess, that when we perused the work of Sir Astley, we were most impressed with the value of the anatomical facts, which are precise and specific; and to the conjecture about the uses of the organ, though ingenious, we felt that what was given as a mere query, was not intended to be made a very serious matter; and from habitual caution in all opinions and speculations on uses of organs, we attached no importance to the conjecture, in comparison with the attention which we gave to the matters of fact, and expressed no opinion as to its merit.

Under these circumstances, we should scarcely have been induced to attach more importance to the mere opinions of Dr Bow, than to those of Sir Astley Cooper. Desirous, however, at all times to give publicity to all ingenious conjectures on obscure and little understood subjects, and also to allow Dr Bow whatever merit his conjectures may possess, we willingly give the passages to which he refers in his work, which appeared in the year 1829.

"To the THYMUS and the SPLEEN the physiologist has not as yet assigned any definite function. I therefore trust I may not be deemed guilty of arrogancy, if I claim for those glands the office of expanding in the fœtus, the nervous influence destined to flow to the respiratory and digestive apparatuses after birth. In the *thymus* gland, the blood is operated upon by nervous influence, supplied by branches from the *par vagum*; it is, as it were, reconverted into chyle, which is conveyed to the thoracic duct to enrich the circulation. The thymus thus acts in the capacity of a stomach to the fœtus. As soon, however, as respiration commences, a new order of things obtains; the lungs and their appendages are furnished with nervous influence at the expence of the thymus gland, which now withers, and gradually diminishes in size."

"By the contrivance of the thymus gland, not only is danger averted, but a power which otherwise would have been perilous to the fœtus is directed to assist in its nutriment."

After giving the opinions of Dr Bow in his own words, we wish to leave our readers to form their own judgment of their merits. In one respect these opinions proceed further than the conjecture of Sir Astley, and therefore do not exactly coincide; and that is in representing the *thymus* and the process supposed to be carried on in it, as a sort of vent or safety valve to dispose of the superfluous nervous energy, which is conceived to exist, and which is after birth required for the function of the lungs and the alimentary tube.

On the other opinion, regarding the use to which it is believed the thymic fluid is applied, Dr Bow must not be displeased when we say, that in his work it appears in the form of a conjecture only, unsupported by any fact or satisfactory argument; whereas, though the opinion of Sir Astley is also conjectural, and merely in the shape of a query, it was suggested by the anatomical fact originally observed by Wharton and Drelincourt, of the large lymphatic vessels terminating in the subclavian vein, and by the milky fluid of the thymic cells being proved by demonstration to be capable of flowing in that direction, and in that only towards the subclavian vein. We are satisfied that Sir Astley Cooper will be pleased to find that Dr Bow has, however circuitously, arrived at the same end.

MEDICAL THERAPEUTICS.

On the Employment of the Alkaline and Neutral Salts in Cholera. By Dr WILLIAM STEVENS, *formerly of Santa-Cruz. (Observations on the Healthy and Diseased Properties of the Blood.* London, 1832.)—We formerly noticed the notions entertained by this ingenious observer on the constitution of the blood, and the changes which it undergoes in fevers and other malignant diseases. From the preternatural thickness and dark colour which the blood acquires in cholera, Dr Stevens was led to think, that the method of treatment which he found so successful in the West Indies and the United States against the violent fevers of these countries would be equally efficacious in the treatment of the Asiatic pestilence.

When cholera was prevailing in St Petersburgh in 1831, Drs Ysenbeck and Brailow, two German physicians, who had the charge of the Custom-House Hospital, stated, at the Medical Council of that city, on 29th July, that, during the preceding 11 days, they treated 30 cholera patients, by giving two table-spoonfuls of common salt or muriate of soda, in six ounces of hot water, at once, and one table-spoonful of this solution cold every hour afterwards. They always began, however, by blood-letting. The result of this method, according to the first statement of these gentlemen, was, that they did not lose one patient; but it appears, from the testimony of Sir William Crichton, as given in the work of Dr Stevens, that they lost only 3, and that 27 recovered, which is certainly a degree of success not obtained from any other mode of treatment. From this success, at all events, when the method was communicated to the army physicians in Poland, they employed it, it is said, with very great advantage.

Dr Stevens, who, of course, is rather tenacious of the merit of his method, and unwilling to allow it to be original in these German physicians, conjectures that they took the hint of it from his paper read before the College of Physicians, since, by the notices in the journals, its material contents might easily become known abroad. In this we see no difficulty certainly; but Dr Stevens, it is to be remembered, though he allows neutral salts, has all along recommended, in the strongest manner, the alkaline carbonates, and those salts which are void, or supposed to be void, of purgative qualities.

About the same time, Mr Searle tried the saline treatment at Warsaw; and in 8 cases, in which muriate of soda was given, he succeeded in restoring reaction. Most of these cases, however, died afterwards, not of cholera it would appear, but, Dr Stevens asserts, "under circumstances of gross neglect;" but probably from the violence of the reaction.

When cholera first appeared last season in Sunderland, Dr Stevens wrote to a physician in Sunderland, recommending him earnestly to give the non-purgative neutral salts a fair trial, in any cases in which either himself or his friends might have opportunities of using it; but, notwithstanding this and a subsequent recommendation, no answer was given or notice taken.

When cholera made its appearance in London, Dr Stevens did every thing he could to induce his medical friends in practice to try the saline treatment; and some tried it in a few instances. These, however, were either hopeless cases, or in the last stage of the disease; and the result made no favourable impression. Others employed it in milder cases; but they combined it with opium, brandy, calomel, and other improper agents; and the good produced by the one method was counteracted by the other. Besides this, the method was opposed, according to the representations of Dr Stevens, by preconceived opinions in some cases, and prejudices in others.

In the meantime, cholera appeared among the prisoners in the Cold Bath Fields Prison in the beginning of April; and Mr Wakefield, the surgeon in charge, offered to show Dr Stevens the cases, and to give him an opportunity of trying the saline method treatment. He further consented that Mr Crooke, a young medical friend of Dr Stevens, should reside in the prison, to see the medicines faithfully administered, and to take notes of the cases.

The following is the outline of the practice pursued not only in the Cold Bath Field's prison, but in every other situation in which Dr Stevens has had an opportunity of treating the disease.

1*st*, The treatment was generally commenced with a Seidlitz powder, with the view of allaying gastric irritation, and partly for the purpose of removing morbid secretions from the intestinal tube.

2*d*, When the stomach was irritable, which was generally the case, a large sinapism was immediately applied to the epigastric region; and when the extremities were cramped, they were rubbed with hot flannel, which had the effect not only of relieving the pain of the cramps, but, with the sinapisms, of augmenting, it is said, the amount of animal heat.

3*d*, A powder, consisting of half a drachm of carbonate of soda, one scruple of muriate of soda, and seven grains of chlorate of potass, was dissolved in half a tumbler of water, and given soon after the Seidlitz. In ordinary cases this powder was administered every hour, in severe cases every half hour, and in some malignant cases every fifteen minutes. In short, it was given more or less frequently according to the circumstances of the case, and continued till the circulation was freely restored, after which it was given at longer intervals; and when reaction was completely re-established it was gradually left off.

4*th*, Where the stomach was irritable, the use of the above powder was occasionally suspended, and common effervescing mixtures, or small doses of common soda powders, with excess of carbonates, were frequently used till the irritation was abated; after which the carbonate of soda, with larger doses of chlorate of potass, were given without muriate of soda; and in some cases of this kind, chlorate of potass alone, in ten-grain doses, was administered.

5*th*, A solution of muriate of soda at as high a temperature as could be borne was injected into the intestines.

6*th*, In two very severe cases which occurred out of the prison, the patients were immersed in a hot saline bath with evident advantage. This means, however, it must be mentioned, was proposed by Mr Marsden, one of the surgeons to the Free Hospital in Greville Street.

7*th*, Seltzer water was allowed *ad libitum* when the patients expressed a desire for something to drink. A strong infusion of green tea was also occasionally used in severe cases apparently with advantage.

8*th*, It was considered essentially necessary to keep a large fire night and day in every room where there was a patient with cholera. From the circumstance of the majority of cases of collapse commencing between 2 and 6 A. M., or when the atmospheric temperature is lowest, Dr Stevens infers that external cold acts as an exciting cause of that condition. From the fact also of the energy with which oxygen removes carbonic acid through a thin membrane depending very much on the temperature of the two fluids, Dr Stevens further infers, that when the temperature of the blood is very low, while the air is also cold, the small quantity of carbonic acid then in the dark venous blood will not be attracted by the cold air, and this of itself may be, he argues, a cause of sudden death.

9th, Patients should not be dismissed as cured till they have been several days completely out of danger. Two of the cases which proved fatal in the Cold Bath Fields Prison perished from this condition having been neglected.

10th, Patients ought not to be allowed any solid or indigestible food for five days at least after recovering from the state of collapse. More than one case terminated fatally from the premature use of solid food; and one woman, a nurse in the London Free Hospital, in Greville Street, was cut off in this way, after having been considered completely out of danger, from a very violent attack of cholera accompanied with collapse.

11th, The saline treatment, when adopted, ought to be trusted to entirely and exclusively. Calomel, brandy, and similar substances, are regarded by Dr Stevens as destructive agents which can do no good; and he denounces opium as a drug not to be allowed. When the stomach is irritable, however, he allows that twenty-five or thirty drops of laudanum diffused in tepid water may be injected into the rectum with considerable advantage.

When the stomach is very irritable, the occasional use of small quantities of milk with carbonate of soda are recommended; and the saline powders must also be given in very small quantities of water.

When the case is very malignant, or when we are called late, and when the symptoms of collapse have already appeared, Dr Stevens recommends an ounce of muriate of soda with half a drachm of the chlorate or the muriate of potass to be given immediately in cold water, and repeated if necessary every half hour until about three doses of this strong solution are taken. Should reaction be induced by this, it may be sustained by the common saline powders; but if this fail, Dr Stevens recommends as a last resource, the injection of a saline fluid into the veins.

Dr Stevens further recommends the discharges and every other source of impurity to be immediately removed, the wards to be fumigated with gunpowder twice daily, and all suspected clothing, bedding, &c. to be boiled for half an hour in a strong solution of common soda.

When the three first cases of the disease appeared in the Cold Bath Fields Prison, the usual remedies of opium, brandy, &c. were employed; but all of them died after a very short illness; and a fourth case treated in this manner, after the introduction of the saline method, also terminated fatally.

Previous to the beginning of April there were no bowel complaints among the prisoners, who were then as healthy as they generally are at that season of the year. The first case reported to the Board occurred on the 5th, when the population of the prison was about 1300 souls; and from the 8th of April, when the saline method of treatment was commenced, to the cessation of the first epidemic in the close of April, 100 individuals at least, more or less, were under the influence of the disease.

In about fifty of these cases the patients were attacked with bowel complaint; and most of them had some degree of irritation of the stomach. The fluids ejected were generally deficient in bile. The bowel complaint was distinguished by the suddenness and urgency of the calls to the night-chair; the ejections were less bilious than in common diarrhœa, and resisted the use of the ordinary remedies for that disease, such as opium, chalk, astringents, &c. which were used chiefly in cases that occurred out of the prison. The whole fifty cases were immediately subjected to the saline treatment, which had the immediate effect of checking the disease;

and between this and the confinement to warm apartments, not one of these cases ended in collapse, and all recovered.

A section of about thirty-one similar cases, in which the above symptoms of bowel complaint were accompanied to a greater or less degree with cramps, were subjected to the same treatment, and at the end of three, four, or five days, every one of them was sent from the observation ward as completely out of danger. Two of these cases, however, there was reason to believe, were prematurely dismissed; for on being sent to the cold wards of the prison, they were attacked with symptoms of collapse during the night; and, before they could be again subjected to the saline treatment, the stomach was so irritable, that in neither did it retain a tea-spoonful of water; and both soon terminated fatally.

In a third section of nineteen cases, the patients were either attacked by the disease, or fell into a state of collapse, in the cold wards of the prison during the night; the stomach did not in the first stage retain the salts, and the disease assumed in almost every one of them a most malignant character. All of these were treated by means of the energetic non-purgative saline remedies; and under this plan, eighteen recovered, and only one died; so that among the entire amount of 100 cases, at least ninety-seven recovered, and only three died.

The whole of these cases occurred in males; and the last case was dismissed cured on the 30th April, so that the whole of the first epidemic was over in less than a single month.

In further illustration of the efficacy of this method of treatment, Mr Wakefield, the surgeon, mentions, that, about the 20th or 21st, he had a most malignant case in the New Prison at Clerkenwell, in which the patient was in a state of perfect collapse before he was seen; with the extremities cold, the pulse at the wrist entirely gone, the tongue cold, and the voice feeble and whispering. This patient, nevertheless, under the saline treatment, rallied; and on the 25th he was convalescent.

Between the 30th of April and the 3d of June no new cases occurred in the prison; but on that day it broke out first among the females, and spread then almost over the whole establishment in a much more virulent and fatal form than in the first epidemic. In the first case the patient was attacked on the night of the 3d, and died on the 5th. Her sister, who attended her, was next taken ill. On the 21st of June, Dr Stevens found twenty choleric patients, and five actually dying from some neglect or mistake, as he imagined, on the part of the nurses who administered the medicines. Saline fluid had been injected into the veins in two cases; but one died almost immediately; and the other, after a temporary rally, soon expired also.

From the commencement of this second epidemic to the date of the account there were 81 cases, many of them most malignant. Of this number 13 died, and the other 68 recovered immediately, or with slight symptoms of reaction. Since this date there were 24 additional cases, making in all 105 cases between the 3d of June and the 2d of July; and of these only 2 died; and there were on the 30th June 22 convalescent cases.

During the prevalence of the epidemic in the Cold Bath Fields Prison, the disease broke out among a colony of itinerant Italians residing in the neighbourhood. The first cases which were put under the care of a physician attached to a cholera hospital in that part of London, were first bled and treated with opium, brandy, calomel, &c.; but the result was so inauspicious, that the other Italians refused to be treated by this gentleman, and sent for Mr Whitmore, an intelligent practitioner on the saline system, and who had witnessed its effects in the Cold Bath Fields Prison. This gentleman treated in this manner about thirty cases of cholera, chiefly among the Italians; and of this number only 2 died, and about 28 recovered. The first fatal case which occurred to Mr Whitmore was that of a woman whose husband had immediately before died of cholera, and who had not used the saline powders ordered. The second unfavourable case was that of another woman,—attended by Mr Whitmore and another gentleman, and to whom effervescing mixtures, consisting of *muriatic acid* and carbonate of soda, were given without benefit.

Several cases occurred between the 12th and 25th May in the same neighbourhood, some of them, one especially, with very bad symptoms of collapse; and all treated by the exhibition of saline medicines recovered well. Soon after this (21st May,) several cases were admitted into the Free-Hospital in Greville Street, 6 from Blue Court, Saffron-hill, and one from Holborn. Two of the nurses who attended these patients were also attacked. One man brought to the hospital in the last stage of collapse died soon after admission. One of the nurses, a very stout woman, was attacked most violently on the 31st May, and being immediately put on the saline treatment, had so far recovered that on Monday the 4th June she was considered out of danger. The same evening about seven, however, having devoured a whole lobster, she was attacked with cramp in the stomach and such gastric irritation, that cold water could not be retained, and she died on the evening of the 6th. These were the only two fatal cases in the hospital in Greville Street after the use of the saline treatment.

Since the period at which these cases occurred in the Cold Bath Field's Prison, several statements have appeared from Sir David Barry, who had visited the cases, alleging that cases of cholera did not exist in the hospital on the 27th June to the extent described in the account of Dr Stevens. It is possible, certainly, that the worst cases may have been much improved under the treatment, and that others may have been prevented from deteriorating, so that no very bad case might be in the prison on the exact day of the visit of Sir David Barry. From a return made by Mr Wakefield, the surgeon, it appears, that on the 26th June twelve cases occurred with symptoms of cholera, ten being premonitory, and two confirmed symptoms,—on the 27th seventeen cases, fourteen being with preliminary symptoms, and three with confirmed symptoms,—on the night of the 28th one without pulse,—and on the 29th one without pulse. It is, perhaps, too fastidious to assert that a case is not cholera unless the countenance is contracted, the eyes sunk, the extremities blue and incurvated, and the pulse gone; and, we believe, it is impossible to deny that several at least of those with the preliminary diarrhœa must have proceeded to collapse if neglected.

On the whole, without attaching to the saline treatment the sovereign influence which Dr Stevens does, we conceive that he has proved that it possesses a certain degree of efficacy; and that, if fairly tried, it might possess a great deal more. That it is not always effectual in collapse is not wonderful; since, perhaps, no remedy can be expected to act on the organs in a state so torpid, insensible, and inert. We have tried the method recommended by Dr Stevens, but certainly without any decided benefit, probably from the cases being too far advanced in the state of collapse. More recently we have seen two cases of decided collapse recover from that state under the use of scruple doses of carbonate of soda repeated every hour; but, in opposition to this, we must say, that we have seen cases at the same time rally under wine and water only. On the whole, we conceive, that the practice of giving alkaline salts deserves at least a fair trial, and should be opposed neither by speculative opinions nor by mere prejudice.

On the use of Cold Water in Cholera. By Dr HARDWICKE SHUTE, of Gloucester. (*In a letter to the Medical Officers of the Central Board of Health.*)—My attention was very early directed to the fact, that no good, or rather as it appears to me most decided injury, was done by the administration of brandy (or alcohol in any of its multifarious forms), and even by the use of the stimulant emetics, when they were retained, as frequently happened in the advanced stages of collapse. In endeavouring to account for the deaths which commonly occurred in the course of a few hours, I was forcibly struck with the marked analogy which exists, as far as the state of the pulse and diminished animal heat are concerned, between the collapse of cholera and the impaired vital energy which results from starvation, or long continued exposure to excessive cold. Now it is an established fact in therapeutics, that the administering of a stimulus, disproportioned in strength or extent to the impaired vital energy of the system, is, under such circumstances, certain death; and that mortification of a frost-bitten extremity uniformly results from the hasty application of too great a degree of heat, or other stimulant, to the affected part. The treatment which I have adopted in the second and third stages of cholera is founded on the analogy already mentioned, and on the general principle that the necessity of diminishing or absolutely withdrawing every kind of stimulus is greater in proportion to the degree of collapse, or sinking of the vital powers.

The circumstance which particularly directed me to the remedy I employ, was the thirst, the excessive and inordinate desire on the part of the patient for water, for cold water more particularly, and I may almost say cold water exclusively; all other liquids being taken with reluctance, if not absolutely refused. I shall therefore state in general terms, that the free and unrestrained allowance of cold water, which, in the most marked cases of recovery, was taken to the extent of some gallons in a few hours, is the circumstance to which I wish particularly to direct your attention. If I add to this the abstraction of all kinds of stimulant remedies, both external and internal, even to the exclusion of friction, or the application of heat in any form, I have stated in general terms the whole plan of treatment, which, as I shall show, has succeeded in twelve out of fourteen, if not in twelve consecutive cases of the third stage of cholera. I am fully aware that the number of cases is too few to justify any thing like a general conclusion; but you will, I think, agree with me that they are not too few to justify a more extensive trial of the plan proposed. And it is with this view that I now address you; hoping that through your influence such trial will be made on a more extensive scale than is in the power of an individual.—I shall now mention some particulars which appear to me calculated to throw additional light on the plan of treatment I propose, it being understood that my observations apply to the *second* and *third*, particularly to the *third* stage of cholera, " when the pulse at the wrist has ceased, or become almost imperceptible."

The windows of the cholera hospital in Gloucester are large and numerous in proportion to the size of the apartments, and are open night and day. The doors open immediately into the garden, and are not suffered to be closed, so that the patients may be considered as living in the open air. I may add that the fires are purposely kept so low as to influence as little as possible the temperature of the room. The covering of the patients is confined to a light blanket and rug; and it seldom happens that some part of the body, particularly the breast and shoulders, is not constantly exposed. Under these circumstances, a pint of cold water is offered to the patient, and very frequently two thirds of this are taken at a draught. In what I consider the most favourable cases, vomiting is almost immediately produced, and the patient in two or three minutes again calls for and eagerly drinks the same quantity with the same result. This is often continued for hours, until gallons of water have been taken, and the greatest proportion (but I conceive not all) rejected by vomiting. In other cases the patient is too insensible to ask for the water; and under these circumstances, it is offered every ten minutes or quarter of an hour, and most commonly drank with avidity. If gruel or tea be offered, the patient most frequently refuses it, and generally speaking no kind of nutriment is taken in any form until the period of convalescence. I consider it of great consequence that the vital powers should be restored as gradually as possible; and it is of importance to remark, that the progress towards recovery has been in all cases remarkably gradual and uniform. In the first six or eight hours no amendment can be observed except some diminution in the purple hue of the extremities; in the next six or eight hours there is a manifest improvement in the countenance of the patient, and more disposition to sleep, but often no restoration of the pulse or increase of temperature. In some cases the pulse has not been perceptible for twenty-four or thirty-six hours. From this period the pulse, the animal heat, and the secretions are very gradually restored, and at the end of forty-eight hours, or the third day from the commencement of the treatment proposed, the patient is convalescent, and in all cases without consecutive fever. I mention these circumstances particularly, in order that the practitioner may not become impatient. He should, in my opinion, be satisfied, and make not the least alteration in the plan proposed as long as the patient is merely not getting worse.

It would be inconsistent with the professed object of this memorial to offer any remarks upon the pathology of cholera, or upon the *modus operandi* of the treatment here recommended. But I cannot refrain from briefly suggesting, first, the importance of knowing;—that in the collapsed stage of cholera, cold may be extensively applied to the coats of the stomach without diminution, to use the most cautious term, of the vital energy. Secondly, that cold so applied has a manifest tendency to check the serous secretion, or perhaps, more correctly speaking, excretion or exudation of serum, which characterizes the disease. Thirdly, the acknowledged effect of vomiting in checking diarrhœa, equalizing the circulation, and emptying the vessels of the liver, and consequently the importance of not checking a natural action which has a conservative tendency. Fourthly, the probable effect of the liquid absorbed by the stomach in restoring the fluidity of the blood; and the presumption that the saline treatment, both as applied to the stomach and by its use in venous injection, may owe its effect as much, probably more, to the fluid itself, than to the ingredients it contains. Fifthly, the great importance of the arterial circulation being restored as gradually as possible, and the fact of convalescence taking place without the consecutive fever, which so often proves fatal in the *fourth* stage—the stage of reaction.

This method of treatment I have used with success in 12 of 14 cases, and I may say in 12 consecutive cases. The first case in which it was tried and proved successful, occurred about six weeks ago, soon after the first appearance of the disease in this city. In the four first cases of the disease which came under my notice, internal and external stimulants were liberally administered. The mustard emetic and bleeding were also had recourse to, and every patient died in less than twelve, one in six hours. I determined therefore (having understood from my professional brethren that the saline treatment had equally failed) to take the first opportunity of watching the disease uninfluenced by remedies, with the hope that I might thus ascertain, if possible, the natural effects of the constitution, if any, to relieve the disease. In the cases already mentioned, I had observed that the stimulants were taken with great reluctance, and in one instance of extreme collapse, when the patient was apparently unconscious of every thing, I was much struck by an earnestly-expressed desire, that no fire should be made in the room, directions to that effect having been given in her hearing. In two of these cases the thirst was, I observed, excessive, and very distressing to the patient.

Soon after this, I was requested by a medical gentleman of this city to visit a female, 15 years of age, whose father was at that time lying in the house dead of cholera. It was a marked case of collapse, with constant vomiting and purging of a fluid like rice-water. The pulse at that time, about one o'clock P. M. was scarcely perceptible. Calomel and opium had been previously given. I recommended a very liberal dose of opium, with various stimulant antispasmodics and olive-oil, and visited the patient again at seven o'clock that evening. The symptoms at that time were much aggravated—the vomiting and purging not at all relieved—the pulse imperceptible—expression of countenance cadaverous in the extreme. In despair, I recommended ten grains of musk to be given every hour, to the extent of two scruples; and left the patient with the impression, which was also that of the other medical gentleman in attendance who was with me, that she could not survive many hours. Having reflected upon the case, and still feeling anxious that relief. if possible, should be given, I returned in an hour with some green tea, and desired some to be made very strong and given. Whilst this was in preparation I visited the patient, and to relieve the thirst, which was excessive, presented a pint of cold water, the greater part of which was eagerly swallowed, and in less than a minute the whole was apparently rejected by vomiting. At this time I may observe, the symptoms were the same as last described. In two or three minutes after she *asked* for the water, which was drank, and immediately rejected as before. Having witnessed the continual repetition of this process for half an hour (during which time the tea had been offered, and refused as soon as tasted) without any increase of collapse, and with the satisfactory circumstance of a change in the voice, which had been highly characteristic of the disease, I left directions that cold water should be given to any extent which the patient might desire. I was informed the next morning that the patient had taken some gallons of water; had been constantly sick after each draught; but had not been sick, or asked for water the last hour. I also ascertained that the window, which opened immediately upon the bed, had not been closed the whole night. At this time there was no perceptible pulse or increase of temperature, but the countenance was, I thought, not quite so cadaverous in expression. The same plan was continued. In the middle of the day there was still no manifest improvement, but in the evening the pulse was perceptible. The next morning the pulse was decidedly improved, and on the following day the patient was convalescent, without any appearance of fever. If I have been tediously minute in the history of this case, I trust that it will be attributed to the great interest I must naturally feel in a case which terminated so satisfactorily, and which was the foundation of my future practice.

Soon after this, I was told by another medical gentleman that he was in despair, having lost seven cases of cholera in succession, and had just visited another, who, he supposed, would be dead before night; and that he had done nothing but ordered small doses of capsicum, with camphor mixture. I found this patient in a similar state to the last—recommended the unrestrained allowance of cold water—heard she was better the next day, and found her convalescent the following day, but with indications of fever. This circumstance, however, was accounted for by the fact of beer and cider, as well as cold water, having, through the prejudice of the attendant, been frequently given.

My experience, subsequent to the cases mentioned, has been confined to the Cholera Hospital in Gloucester, which was opened a fortnight ago, and placed under my superintendance, with the assistance of a resident surgeon. The first four cases sent to the Hospital, which was then under my care, were all dead next morning. Since that period, of the forty-eight cases admitted, twenty-one have been discharged cured; eight I consider convalescent; eight are under treatment; and eleven have died. Of the eleven deaths, two might fairly be attributed to previous treatment, or other circumstances; three were in progress towards recovery, and relapsed from improper exertions on the part of the patients; two which were under three years of age, died under symptoms of cerebral congestion, after the pulse had been restored; one was more than sixty years of age, another about fifty, and extremely emaciated from previous disease or starvation; in one, the case was too advanced to admit of the plan being tried; and in another the patient was a notorious drunkard, and died a few hours after admission, with a gin bottle concealed about her person, If due consideration be given to these circumstances, the deaths cannot, I think, throw any discredit on the practice. I may add, that in all the cases great allowance must be made for the effect of previous treatment, as being most commonly directly opposite to my views of the disease. My experience hitherto justifies, in my opinion, the following conclusions, viz:—That in all cases the progress towards death is retarded by the water treatment; that when the irritability of the stomach is excessive or unimpaired, re-action will be established in a very great proportion of the cases; and that when the natural powers of the constitution are not unusually weak from extremes of age or other causes, such re-action will be followed by an early convalescence.—Any suggestion from those who are much more conversant with the disease than myself, will be received with gratitude, and any question answered to the utmost of my ability.

Gloucester, August 26th 1832.

Ipecacuanha in Cholera.—By a letter addressed from Baron De Viculine, a Russian officer of rank, to a particular friend, dated Barken, 10th March 1832, we are informed, that in his vicinity, ipecacuanha, in large doses, was given in cholera with great benefit and success. Of this powder at first 40 grains were given; and the dose, it is said, was increased gradually to 300, that is, 5 drachms. We have no precise information on the effects of this remedy thus administered; but it is said, rather vaguely, that out of 100 attacks at least 90 were cured by it.

We have tried this remedy in several cases of cholera, and with the following results. In one case of pure pulseless collapse a drachm of ipecacuanha was given, and was not followed by vomiting. An hour after another drachm was given, and was equally ineffectual in producing vomiting; and the man, who had been ill for two days, died next morning. In another case of collapse, also without pulse, but with great heat at stomach, a drachm of ipecacuanha was given, and did not induce vomiting; and after an hour a similar dose was given with the same want of effect. In a third case, in which, with occasional vomiting, the purging was profuse and the pulse weak, 30 grains of ipecacuanha were given, and did not produce vomiting in the course of half an hour, when other 30 grains were given, and were followed by imperfect vomiting. A quarter of an hour after other 30 grains were given; and after the lapse of about three quarters of an hour copious vomiting took place. The purging now stopped; the pulse became fuller in the course of a few hours; and the patient rallied so as to be convalescent in two days. Two days after, however, he had a relapse, and was with difficulty brought out of the incipient stage of collapse.

Case in which the Hydrostatic Bed has been used with advantage. By Dr R. Spittal.—The object of the following short notice is to add another fact in support of the statement of Dr Arnott and others on the utility of the hydrostatic bed. But, least the construction of the bed be unknown to any one who may peruse this, I shall first give an account of one constructed under the superintendence of my friend Dr B. Reid, according to the plan recommended by Dr Arnott. It simply consists then of a trough of one foot deep, and lined with zinc, of the size and shape of an ordinary bed for one person, and resting upon four feet like other beds. The trough is half filled with water, on the surface of which a sheet of caoutchouc cloth is loosely laid and attached all around the edges of the bed, for the double purpose of keeping it in its proper place, and preventing the possible escape of the water by capillary attraction or otherwise; at one of the corners of the bed there are tubes for introducing and drawing off the water. A thin hair mattress is then laid over the caoutchouc cloth, and over this the usual bed-clothes.

A person lying in such a bed is actually afloat on the surface of the water; and, in the words of Dr Arnott, "the support of water to a floating body is so uniformly diffused, that every thousandth of an inch of the inferior surface has as it were its own separate liquid pillar, and no one part bears the load of its neighbour."

The principal advantage then gained by a use of the hydrostatic bed is the removal of that inequality of pressure so annoying to the bed-ridden, and so often the cause of troublesome and sometimes dangerous sores, examples of which every medical practitioner must have witnessed. Many other advantages are possessed by the hydrostatic bed, which I shall not enlarge upon, but refer for further information to an extract from Dr Arnott's Elements of Physics, fifth edition, in the Penny Magazine for August 1832.

The case in which I have used the hydrostatic bed is in that of an old lady of 70, who has been confined constantly to bed for upwards of six weeks, in consequence of a severe sloughing sore on the leg, which has reduced her to an extreme state of weakness. During the last few weeks she has suffered much from restlessness and want of sleep. She was unable to turn herself in bed; and although every care was taken to change her position as often as seemed necessary, still at last the integuments over the sacrum began to give way, a small gangrenous spot having appeared. The integuments over the trochanters were at the same time slightly in an inflammatory condition.

Under these circumstances, the hydrostatic bed at once occurred to me, and on the evening of the day on which the state of the back was observed, the patient was put upon the bed. She fell asleep two hours afterwards, and slept for seven hours, and this was remarked by her attendants and friends to be the longest sleep she had enjoyed for weeks. She has now passed six days in the hydrostatic bed, and still continues to enjoy long and refreshing sleep.

The patient is not aware of the nature of the bed; but on asking her how she likes it when compared with her former bed, she replies, that she likes it better, for it is much softer. The hydrostatic bed of course is always soft, and does not require the patient to submit to the fatigue consequent upon the shaking up of ordinary beds; for although this was done in the most gentle way, still the consequent fatigue was great; but this is now completely saved by the use of the hydrostatic bed.

The gangrene of the integuments of the back has not at all increased since her removal to the new bed; on the contrary, the original patch is now separating, and the parts look well. She has become altogether improved since her removal, and whatever may be the final result of the case, the comparative ease and comfort afforded to her by the use of the hydrostatic bed are, I think, sufficient to establish its claim to the attention of medical men, and to encourage the repetition of similar trials.

I am sorry that the date of publication of the Journal does not permit me to give a more extended, and consequently more satisfactory account. So far as it goes, however, the short trial in the present case is sufficiently favourable to encourage us to expect the most beneficial results from its use in cases of *erythema* and gangrene from pressure.

Edinburgh, Sept. 19*th* 1832.

MISCELLANEOUS.

An Act for regulating Schools of Anatomy. 1st August 1832.—Whereas a knowledge of the causes and nature of sundry diseases which affect the body, and of the best methods of treating and curing such diseases, and of healing and repairing divers wounds and injuries to which the human frame is liable, cannot be acquired without the aid of anatomical examination: and whereas the legal supply of human bodies for such anatomical examination is insufficient fully to provide the means of such knowledge: and whereas, in order further to supply human bodies for such purposes, divers great and grievous crimes have been committed, and lately murder, for the single object of selling for such purposes the bodies of the persons so murdered: and whereas, therefore, it is highly expedient to give protection, under certain regulations, to the study and practice of anatomy, and to prevent, as far as may be, such great and grievous crimes and murder as aforesaid; be it therefore enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, that it shall be lawful for his Majesty's principal Secretary of State for the time being for the Home Department in that part of the united kingdom called Great Britain, and for the chief Secretary for Ireland in that part of the united kingdom called Ireland, immediately on the passing of this act, or so soon thereafter as may be required, to grant a licence to practice anatomy to any fellow or member of any College of Physicians or Surgeons, or to any graduate or licentiate in medicine, or to any person lawfully qualified to practise medicine in any part of the united kingdom, or to any professor or teacher of anatomy, medicine or surgery, or to any student attending any school of anatomy, on application from such party, for such purpose, countersigned by two of his Majesty's Justices of the Peace acting for the county, city, borough, or place wherein such party resides, certifying that, to their knowledge or belief, such party so applying is about to carry on the practice of anatomy.

II. And be it enacted, that it shall be lawful for his Majesty's said principal Secretary of State or chief Secretary, as the case may be, immediately on the passing of this act, or as soon thereafter as may be necessary, to appoint respectively not fewer than three persons to be inspectors of places where anatomy is carried on, and at any time after such first appointment to appoint, if they shall see fit, one or more other person or persons to be an inspector or inspecters as aforesaid; and every such inspector shall continue in office for one year, or until he be removed by the said Secretary of State or chief Secretary, as the case may be, or until some other person shall be appointed in his place; and as often as any inspector appointed as aforesaid shall die, or shall be removed from his said office, or shall refuse or become unable to act, it shall be lawful for the said Secretary of State or chief Secretary, as the case may be, to appoint another person to be inspector in his room.

III. And be it enacted, that it shall be lawful for the said Secretary of State or chief Secretary, as the case may be, to direct what district of town or country, or of both, and what places where anatomy is carried on, situate within such district, every such inspector shall be appointed to superintend, and in what manner every such inspector shall transact the duties of his office.

IV. And be it enacted, that every inspector to be appointed by virtue of this act shall make a quarterly return to the said Secretary of State or chief Secretary, as the case may be, of every deceased person's body that during the preceding quarter has been removed for anatomical examination to every separate place in his district where anatomy is carried on, distinguishing the sex, and, as far as is known at the time, the name and age of each person whose body was so removed as aforesaid.

V. And be it enacted, that it shall be lawful for every such inspector to visit and inspect, at any time, any place within his district, notice of which place has been given, as is herein-after directed, that it is intended there to practise anatomy.

VI. And be it enacted, that it shall be lawful for his Majesty to grant to every such inspector such an annual salary, not exceeding one hundred pounds for his trouble, and to allow such a sum of money for the expenses of his office, as may appear reasonable; such salaries and allowances to be charged on the consolidated fund of the united kingdom, and to be payable quarterly; and that an annual return of all such salaries and allowances shall be made to Parliament.

VII. And be it enacted, that it shall be lawful for any executor or other party having lawful possession of the body of any deceased person, and not being an undertaker or other party intrusted with the body for the purpose only of interment, to permit the body of such deceased person to undergo anatomical examination, unless, to the knowledge of such executor or other party, such person shall have expressed his desire, either in writing at any time during his life, or verbally in the presence of two or more witnesses during the illness whereof he died, that his body after death might not undergo such examination, or unless the surviving husband or wife, or any known relative of the deceased person, shall require the body to be interred without such examination.

VIII. And be it enacted, that if any person, either in writing at any time during his life, or verbally in the presence of two or more witnesses during the illness whereof he died, shall direct that his body after death be examined anatomically, or shall nominate any party by this act authorized to examine bodies anatomically to make such examination, and if, before the burial of the body of such person, such direction or nomination shall be made known to the party having lawful possession of the dead body, then such last mentioned party shall direct such examination to be made; and in case of any such nomination, as aforesaid, shall request and permit any party so authorized and nominated as aforesaid to make such examination, unless the deceased person's surviving husband or wife, or nearest known relative, or any one or more of such person's nearest known relatives, being of kin in the same degree, shall require the body to be interred without such examination.

IX. Provided always, and be it enacted, that in no case shall the body of any person be removed for anatomical examination from any place where such person may have died, until after forty-eight hours from the time of such person's decease, nor until after twenty-four hours notice, to be reckoned from the time of such decease, to the inspector of the district, of the intended removal of the body, or if no such inspector have been appointed, to some physician, surgeon, or apothecary residing at or near the place of death, nor unless a certificate stating in what manner such person came by his death shall previously to the removal of the body have been signed by the physician, surgeon, or apothecary who attended such person during the illness whereof he died, or if no such medical man attended such person during such illness, then by some physician, surgeon, or apothecary who shall be called in after the death of such person to view his body, and who shall state the manner or cause of death according to the best of his knowledge and belief, but who shall not be concerned in examining the body after removal; and that in case of such removal, such certificate shall be delivered, together with the body, to the party receiving the same for anatomical examination.

X. And be it enacted, That it shall be lawful for any member or fellow of any College of Physicians or Surgeons, or any graduate or licentiate in medicine, or any person lawfully qualified to practise medicine in any part of the united kingdom, or any professor, teacher, or student of anatomy, medicine or surgery, having a licence from his Majesty's principal Secretary of State or chief Secretary as aforesaid, to receive or possess for anatomical examination, or to examine anatomically, the body of any person deceased, if permitted or directed so to do by a party who had at the time of giving such permission or direction lawful possession of the body, and who had power, in pursuance of the provisions of this act, to permit or cause the body to be so examined, and provided such certificate as aforesaid were delivered by such party together with the body.

XI. And be it enacted, That every party so receiving a body for anatomical examination after removal shall demand and receive, together with the body, a certificate as aforesaid, and shall, within twenty-four hours next after such removal, transmit to the inspector of the district such certificate, and also a return stating at what day and hour, and from whom the body was received, the date and place of death, the sex, and (as far as is known at the time) the Christian and surname, age, and last place of abode of such person, or, if no such inspector have been appointed, to some physician, surgeon, or apothecary residing at or near the place to which the body is removed, and shall enter or cause to be entered the aforesaid particulars relating thereto, and a copy of the certificate he received therewith, in a book to be kept by him for that purpose, and shall produce such book whenever required so to do by any inspector so appointed as aforesaid.

XII. And be it enacted, That it shall not be lawful for any party to carry on or teach anatomy at any place, or at any place to receive or possess for anatomical examination, or examine anatomically, any deceased person's body after removal of the same, unless such party, or the owner or occupier of such place, or some party by this act authorized to examine bodies anatomically, shall, at least one week before the first receipt or possession of a body for such purpose at such place, have given notice to the said Secretary of State or chief Secretary, as the case may be, of the place where it is intended to practise anatomy.

XIII. Provided always, and be it enacted, That every such body so removed as aforesaid for the purpose of examination shall, before such removal, be placed in a decent coffin or shell, and be removed therein; and that the party removing the same, or causing the same to be removed as aforesaid, shall make provision that such body, after undergoing anatomical examination, be decently interred in consecrated ground, or in some public burial ground in use for persons of that religious persuasion to which the person whose body was so removed belonged; and that a certificate of the interment of such body shall be transmitted to the inspector of the district within six weeks after the day on which such body was received as aforesaid.

XIV. And be it enacted, That no member or fellow of any College of Physicians or Surgeons, nor any graduate or licentiate in medicine, nor any person lawfully qualified to practise medicine, in any part of the united kingdom, nor any professor, teacher, or student of anatomy, medicine, or surgery, having a licence from his Majesty's principal Secretary of State or chief Secretary as aforesaid, shall be liable to any prosecution, penalty, forfeiture, or punishment for receiving or having in his possession for anatomical examination, or for examining anatomically, any dead human body, according to the provisions of this act.

XV. And be it enacted, That nothing in this act contained shall be construed to extend to or to prohibit any *post-mortem* examination of any human body required or directed to be made by any competent legal authority.

XVI. And whereas an act was passed in the ninth year of the reign of his late Majesty, for consolidating and amending the statutes in England relative to offences against the person, by which latter act it is enacted, that the body of every person convicted of murder shall, after execution, either be dissected or hung in chains, as to the court which tried the offender shall seem meet; and that the sentence to be pronounced by the court shall express that the body of the offender shall be dissected or hung in chains, whichsoever of the two the court shall order; be it enacted, That so much of the said last-recited act as authorizes the court, if it shall see fit, to direct that the body of a person convicted of murder shall, after execution, be dissected, be and the same is hereby repealed; and that in every case of conviction of any prisoner for murder, the court before which such prisoner shall have been tried shall direct such prisoner either to be hung in chains, or to be buried within the precincts of the prison in which such prisoner shall have been confined after conviction, as to such court shall seem meet; and that the sentence to be pronounced by the court shall express that the body of such prisoner shall be hung in chains, or buried within the precincts of the prison, whichever of the two the court shall order.

XVII. And be it enacted, That if any action or suit shall be commenced or brought against any person for any thing done in pursuance of this act, the same shall be commenced within six calendar months next after the cause of action accrued; and the defendant in every such action or suit may, at his election, plead the matter specially, or the general issue not guilty, and give this act and the special matter in evidence at any trial to be had thereupon.

XVIII. And be it enacted, That any person offending against the provisions of this act in England or Ireland shall be deemed and taken to be guilty of a misdemeanour, and, being duly convicted thereof, shall be punished by imprisonment for a term not exceeding three months, or by a fine not exceeding fifty pounds, at the discretion of the court before which he shall be tried; and any person offending against the provisions of this act in Scotland shall, upon being duly convicted of such offence, be punished by imprisonment for a term not exceeding three months, or by a fine not exceeding fifty pounds, at the discretion of the court before which he shall be tried.

XIX. And in order to remove doubts as to the meaning of certain words in this act, be it enacted, That the words "person and party" shall be respectively deemed to include any number of persons, or any society, whether by charter or otherwise; and that the meaning of the aforesaid words shall not be restricted, although the same may be subsequently referred to in the singular number and masculine gender only.

XX. And be it enacted, That this act shall commence and take effect from and after the first day of August in the present pear.

XXI. And be it enacted, That this act may be altered or amended during the present session of Parliament.

GRADUATIONS AND SURGICAL EXAMINATIONS.

Medical Graduations at Edinburgh.—On the 12th of July 1832, the Senatus Academicus of the University of Edinburgh conferred the Degree of Doctor in Medicine on the following Gentlemen, in number one hundred and twelve, after having gone through the appointed examinations, and defended publicly their Inaugural Dissertations.

Of Scotland.

Henry Scott Anderson, De Iodino.
William P. Bain, De Morbis Renum et Secretione Urinæ Albuminosæ.
Alex. L. Black, De Epilepsia.
James D. Brown, De Typho.
Geo. Cheyne, De Actione Morphiæ.
Frederick Cumming, De Erysipelate.
Archibald Dymock, De Anatomia et Pathologia Membranæ Synovialis.
James Eckford, De Dysenteria.
Colin C. Gibson, De Dysenteria.
Andrew Hill, De Enteritide.
John C. Hislop, De Podagra.

A. C. Kelly, Irritatione Contraria.
Alex. Macintosh, De Erysipelate.
John Melliss, De Aneurismate.
Alexander Munro, De Pathologia Medullæ Spinalis.
J. Paton, De Apoplexia Sanguinea.
Charles Scott, De Ophthalmia.
F. W. Sheriff, De Morbo Coxario.
James Simpson, De Causa Mortis in quibusdam Inflammationibus proxima.
David Thomson, De Erysipelate.
John Tullis, De Dysenteria.
Alexander Ure, De Cranii Noxis.
Alex. Walker, De Calore Animali.
James Weir, De Iritide.

From England.

William Hogg Anderson, De Phthisi Pulmonali.
H. K. Armstrong, De Rheumatismo.
James Ashton, De Hemiplegia.
John Moore Bates, De Erysipelate.
Henry Hulme Cheek, De Variis Conjecturis quod ad Lienis Utilitatem.
J. Edwards, De Inclinatione Spinæ.
Griffith F. D. Evans, De Podagra.
William H. Gooch, De Phthiseos Pathologia et Semeiologia.
Robert Hardy, De Phthisi.
Richard H. Hepple, De Fracturis Compositis.
Christopher Hudson, De Necrosi.
Jessop G. Hulton, De Ophthalmia.
W. Lloyd, De Membranis Mucosis.
Fitzwilliam Mansell, De Erysipelate
John Troy Martin, De Dyspepsia.
J. A. Mason, De Sanguine mittendo.
George Morley, De Gonorrhœa.
P. Nicolson, De Articulis Excidendis
H. Powell, De Dothinenteritide.
Nathaniel Rogers, De Primo Statu Tuberculorum.
T. Waterhouse, De Impulsu Cordis
G. B. Whiteley, De Inflammatione.
James Wilson, De Hepatitide.

From Ireland.

George Hill Adams, De Tetano.
T. Allen, De Rheumatismo Acuto.
James Anderson, De Hysteria.
W. G. Bace, De Delirio Tremente.
David Barry, De Dysenteria.
John Belcher, De Ophthalmia.
Francis Clancey, De Phthisi.
James C. Colgan, De Pneumonia.
Henry Croley, De Scarlatina.
J. G. Daunt, De Hepatitide Acuta.
Collis C. J. Delmege, De Hernia.
E. C. Dillon, De Ascite Abdominali.
Patrick Dore, De Morbo Coxario.
G. Fullarton, De Phthisi Pulmonali.
John Glover Gregg, De Pneumonia.
J. Griffin, De Cynanche Tracheale.
Charles Hewitt, De Iritide.
John Houston, De Phimosi.
John Irwin, De Variola.
John Jacob, De Vermibus.
William Johnson, De Neuralgia.
James Kennedy, De Ascite.
G. W. Langford, De Peritonitide.
G. A. Latham, De Pneumonia.
W. D. D. La Touche, De Hydrocele.
Henry St G. Layard, De Dyspepsia.
Martin Lynch, De Urethra Irritabili et Stricta.
Samuel Macurdy, De Cancro.
James D. Marshall, De Pertussi.
David Mitchell, De Vermibus Intestinorum.
Michael Moore, De Indiæ Occidentalis Febribus.
William Moorhead, De Hysteria.
George Morrogh, De Hydrocephalo Acuto.
M. D. Nolan, De Injuriis Capitis.
Cornelius O'Driscoll, De Hepatitide.
Donat O'Loghlen, De Hydrothorace.
G. E. O'Sullivan, De Hemorrhagia.
William H. Parkinson, De Ischuria.
J. Paterson, De Phthisi Pulmonali.
Henry Paterson, De Injuriis Capitis.
William L. Powell, De Peritonitide.
M. O'Keefe Reedy, De Hydrocele.
R. Ridgeway, De Hepatitide Acuta.
Thomas Riordan, De Hydrothorace.
George Robinson, De Peritonitide.
Samuel C. Roe, De Morbis Militaribus præsertim Febre remittenti Ioniana.
Robert Roper, De Morbis quibus Viri summo Ingenio præditi patent.
Patrick Ryan, De Dysenteria.
Aris B. Sherwood, De Peritonitide Puerperali.
John Trimble, De Hepatitide Acuta.
Robert Atkins Twiss, De Tetano.
B. White, De Hypertrophia Cordis.
A. K. Young, De Strictura Urethræ.

From the West Indies.

Richard G. Davoren, De Phlegmasia Dolente.
F. Goding, De Medicina Mentis.
John Waddell, De Febre Flava.

From America.

Thomas S. Blackwood, De Tetano.

J. Bacey, De Hydrocephalo Acuto.
Frederick A. Webster, De Paralysi.
From Spain.
J. B. de Roger, De Rheumatismo.
From the Cape of Good Hope.
P. Chiappini, De Colica Saturnina.
From the East Indies.
Alexander Knox, De Vitiis Membranæ generis Synovialis.
Robert Stuart, De Erysipelate.
Archibald Stewart, De Aneurismate.
From the Island of Sarnia.
T. L. Mansell, De Calore Speciali.

Surgeons' Hall, Edinburgh, July 2, 1832.—*Since Whitsunday last* the following Gentlemen have offered themselves as Candidates for the *Diploma of the Royal College of Surgeons of Edinburgh,* and after producing satisfactory evidence that they had completed the course of study prescribed by the College, have been admitted to examination, and found fully qualified to practise the arts of *Anatomy, Surgery, and Pharmacy,* and have received Diplomas accordingly.

Of Scotland.
James Wallace,
John Clark Maclaurin,
Kenneth M. Young,
James W. Broughton,
James Stark,
William S. Gairdner,
James Fortune,
Donald Crawford,
George Cheyne,
William Harvey,
George Paton,
John C. Haldan,
William C. Maclean,
Isaac Haig,
John Chirnside,
Thomas Hunter,
James Miller,
John Robert Speirs,
Robert Paterson,
John Gall,
George Macdougall,
Thomas Maclelland,
From England.
James Edwards,
Charles Underwood,
Robert Hardy,
Henry W. Ker,
George B. Whiteley,
James Marr,
Charles Nicholson,
John A. Mason,
John S. Newbold,
George Maclaren,
From Ireland.
Cornelius O'Driscoll,
James Donelly,
Charles J. O'Hara,
Robert H. C. Gillier,
Martin Lynch,
Thomas M'Donnell,
Patrick Ryan,
Henry Sullivan,
From Abroad.
James Douglas,
John Bunn,
Robert Menzies,
James W. Jones,
James Arthur Sewell,

Extracted from the Records of the Royal College by
(Signed) Wm. Scott, *Sec.*

The following Gentlemen, whose names have been accidentally omitted in their proper place, were admitted Licentiates of the Royal College of Surgeons, Edinburgh, between the terms of Lammas and Martinmas 1831.

Of Scotland.
Adam Ritchie Ewart,
Paul Darling Veitch,
Alexander Mitchell,
Edward Mitchell,
James Home,
John Tait,
James Balfour Wishart,
Somerville Scott Alison,
Duncan Campbell,
John Colin Campbell,
Fergus Hawthorn,
James Hood,
Paul Darling,
Alexander L. Moodie,
Stevens Fyfe,
Alexander Coventry,
William Pitcairn,
David Alexander,
James W. Turnbull,
George Kirk,
Robert Jameson,
David Waldie,
James Law,
Alexander Macdougal,
Gilbert Kennedy,
James Macgregor,
Hugh Cameron,
Robert T. C. Scott,
From England.
Parr W. Hockin,
Robert Denmark,
William B. Scott,
Patrick A. Macdonald,
From Wales.
James Knowles,
From Ireland.
John Cameron,
John Caldwell,
Richard Balfour Reid,
From Abroad.
Peter Chiappini,
David M'Connel Reed,
William S. Trench,
William Bell Irving,
Henry W. Porteous,

(Signed) Wm. Scott, *Sec.*

Dr Carswell's Lithographic Illustrations of Objects in Pathological Anatomy.—We observe with much pleasure, that Dr Carswell has announced the publication of a work on Pathological Anatomy, illustrated with coloured plates from drawings on stone by the author. No man perhaps ever enjoyed superior opportunities of prosecuting this subject, or possessed the same combination of talents for illustrating it. It is consistent with our knowledge that Dr Carswell has devoted upwards of ten years to the sedulous and unremitting investigation of morbid, or, more properly speaking, pathological anatomy ; for not only were the morbid parts examined with the utmost minuteness, and delineated with the most scrupulous care after death, but the symptoms of the disease during its progress were carefully observed and noted ; so that, together with the most extensive collections of pathological delineation, Dr Carswell possesses the history of the cases in a large proportion,—a circumstance which adds vastly to the value of Dr Carswell's unrivalled collection of drawings of morbid anatomy.

Dr Carswell deserves the support of the profession in the prosecution of his arduous undertaking. We wish him every success on his own account, and also for the progress of that science which he has cultivated with so much zeal and assiduity.

Provincial Medico-Chirurgical Association.—On Thursday the 18th July, a meeting of more than fifty medical gentlemen took place, agreeably to advertisement, in the Board Room of the Worcester Infirmary, for the purpose of forming an Association under the above name. Besides the resident faculty of the city of Worcester and the neighbouring towns, many of the leading professional gentlemen of the midland and western counties were present ; among others, Dr Kidd of Oxford, Dr Johnston, Dr Corrie, Mr Hodgson, and Mr W. Sands Cox of Birmingham, Dr Barlow of Bath, Dr Conolly of Warwick, Dr W. Conolly of Cheltenham, Dr Evans Junior of Ross, Dr Thomas of Rose Lawn, Mr Soden of Bath, Mr Hetling of Bristol, and others too numerous to recount. The venerable Dr Johnston of Birminghan was unanimously called to the chair ; and after a short address, a series of resolutions were passed, indicative of the nature and objects of the association.

This institution, which owes its birth chiefly to the exertions of the zealous and enlightened Dr Hastings of Worcester, is formed chiefly for the sake of promoting a liberal intercourse between the members of the profession in the midland and western counties, and co-operating in the common cause of the advancement of medical and surgical information. The Association, which consists of more than 150 members, is to be managed by a President, two Secretaries, and a Council, each appointed annually. The two Secretaries only must be resident in Worcester, which is to be regarded as the head-quarters of the Association. The President and the Members of Council may be selected from among the physicians or surgeons resident in any of the towns within the circle of the Association. The meetings are to be annual, and are to be held in rotation at one of the principal towns within the circle. At each annual meeting, besides private business, relating to accounts and pecuniary transactions, a discourse on the state of medical science, or an oration on some medical or surgical subject, is to be delivered ; or a biographical memoir of some eminent votary of medical science who may have resided in the provinces is to be read. Dr Johnston of Birmingham was elected President for 1832-3, and Dr Carrick of Bristol, for 1833-4. Dr Hastings and Mr Sheppard were elected Secretaries ; and a Council, consisting of the following gentlemen, was nominated:—Drs Barlow, Baron, Bernard, Bevan, Boisragon, Joseph Browne, Carrick, Conolly, W. Conolly, Darwall, Evans, and Evans Junior, Forbes, C. Henry, Jeffreys, J. Johnstone, Kidd, Malden, J. Nash, Pritchard, Streeten, Traill, Walker, Franklin, and Ward, and Messrs Gwynne Bird, Carden, W. Carden, Griffiths, Hebb, Hetling, James, Heron, Lylend, Pierrepoint, Rayment, R. Smith, Soden, Tuckwell, Jennings, and Fowke. Among their other duties, these gentlemen will decide on the papers which are to be published by the Association.

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